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# MONITORING UTILITY PERFORMANCE

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# Purpose of Monitoring

The Department of infrastructure and operations' objective is to:

- To review, develop and enforce standards and guidelines for monitoring of utilities with respect to environment, performance, quality, safety, reliability and supply of energy.
- This is to ensure that utilities provide a level of quality of service which is acceptable to customers and is in line the ERB's mission statement.

# Legal framework

- The Energy Regulation Act stipulates that the ERB shall monitor the efficiency and performance of Utilities.
- This is done through the following regulatory Instruments
  - Standards – to guarantee minimum service levels
  - Licenses
  - Regulations



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# Instruments of Regulation

## 1. Standards

### Electricity Standards

#### Safety Code

- Safeguarding life
- Safeguarding property
- Safeguarding the environment

#### Power Quality

- Frequency
- Voltage Regulation
- Harmonics
- Power factor
- Transients
- Voltage dips
- Flicker

#### Customer Service

- Response time
- Restoration time
- Outage frequency

# Instruments of Regulation

Other standards developed by the Energy Regulation Board include the following:

- Electricity metering standards.
- The Grid code – under development
- Electricity construction standards – under development



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# Instruments of Regulation

## 2. License

Type of License	Duration
1. Generation	30 years
2. Transmission	30 years
3. Distribution	5 years
4. Supply	5 years

# Instruments of Regulation

- All the four licenses are being reviewed under the IPA project.
- Provision and access to data and information is a license requirement.
- Compliance to technical standards is a license requirement.
- Compliance monitoring is a license requirement
- The licenses stipulates enforcement action.

# Instruments of Regulation

## 3. Regulations

- The Electricity safety Code (ZS 418) has been submitted to the Justice Ministry for enactment as regulations.
- The Electricity metering Code (ZS 647) will be submitted to the Ministry of Energy for consideration for enactment as regulations later this year.



# Sources of Information

- Monthly operating statements.
- Audits and routine inspection reports.
- Customer compliant investigation reports.
- Incident investigation reports.
- Accident reports.

# Reporting systems and Performance indicators

The reporting systems are stipulated in the standards and licenses.

- The code of practice ZS 387 -3 stipulates the measurement and reporting procedures for power quality and reliability monitoring.
- The Zambian standard ZS 397 stipulates the reporting procedures for quality of consumer service provision.
- The standards above will be specified in the reviewed licenses as license requirements. The standards guarantee minimum service provision.
- The License also provides for the ERB to obtain information in any other format the ERB approves.

## Reporting systems and Performance indicators -cont

In addition to the provisions of the standards, the ERB is in the process of instituting the monitoring of the following technical performance indicators:

- SYSTEM AVERAGE INTERRUPTION FREQUENCY INDEX (SAIFI)

SAIFI measures the average number of sustained power interruptions for each customer during a specified time period. It is calculated by dividing the total number of sustained customer interruptions by the total number of customers.

# Reporting systems and Performance indicators -cont

- **SYSTEM AVERAGE INTERRUPTION DURATION INDEX**  
SAIDI measures the average duration of outages per customer. It is calculated by dividing the total minutes of sustained customer interruptions by the total no. of customers.
- **AVERAGE INTERRUPTION DURATION INDEX**  
CAIDI, which is calculated by dividing the total number of customer minutes of interruption by the total number of customer interruptions, measures the average duration of the outages experienced by customers.

## Reporting systems and Performance indicators -cont

- The ERB presented the above indicators at a stakeholders meeting in January and were accepted.
- The proposal is to have as reporting requirements the above indicators as a license condition.
- The license condition will stipulate the recording and reporting requirements to provide uniform methods for assessing data related to the frequency and duration of system outages. Utilities shall record and report system reliability information annually using the above indices

# PERFORMANCE DATA

Measurement of indices relies heavily on the availability and accuracy of data.

- Zesco has implemented the Business Information System (BIS).
- ZESCO has a centralized call centre.
- ZESCO has Rehabilitated and strengthened various networks in the power system through PRP. SCADA systems have also been installed in Lusaka and Kitwe.
- Massive education programs to its employees about definitions of reliability indices, how and when to properly capture interruption data, etc

# Challenges

- Some of the utilities still reluctant to provide information.
- Reluctance by some utilities to comply with standards.
- Enactment of regulations take too long.
- Other performance indices shall be implemented progressively as the utility acquires capacity to capture the relevant data.
- Enforcement has been major challenge