



**London Hydro**  
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**RE: Initiative to Develop Electricity Distribution System Reliability Standards. Board File No.: EB-2010-0249**

***Answers to: Attachment A - "Questions to Discuss For Electricity Distributors"***

Current Practices

- **In addition to SAIDI, SAIFI and CAIDI, what, if any, other system reliability measures do you use?**
  - In addition to the above indices London Hydro keeps record of MAIFI. MAIFI has been included in the internal reporting since Jan 2010.
  - London Hydro also keeps track of Feeder Average Interruption Frequency Index (FAIFI), and Feeder Average Interruption Duration Index (FAIDI).
- **Provide a detailed description of your methodology utilized to record SAIDI and SAIFI. Please include information such as:**
  - **The degree of use of automated event tracking from SCADA systems, as well as reliance on manual observations.**
  - **Whether planned outages are tracked separately.**
  - **The level of detail captured throughout a stepped restoration process to record the total customer duration impact.**

Degree of Automation:

- All events of automated switching are recorded in London Hydro's SCADA system. Also Auto-reclose events of Transformer Station main feeders as well as London Hydro Substation feeders are automatically captured through the SCADA system.
- The operation of all other manual switches are manually recorded in the operators log book and then inputted in an electronic database which also includes the operations of switches/breakers captured in SCADA.

#### Operation/Outage Database:

- This database includes the time of outage, duration, number of customers affected, and cause of each outage.

#### Details Captured during stepped restoration:

- The degree of accuracy of customers affected per outage is dependent on our GIS system. Number of customer, experiencing an outage, is recorded in detail such that the number of customers affected is captured with each step in the restoration process.

#### Analysis of outages:

- SAIDI, SAIFI, CAIDI, and MAIFI are calculated from the electronic outage database and are categorized per cause (example: Defective equipment, foreign interference, scheduled outages, etc.). Indices reported to the OEB include all the outages experienced by customers; this includes planned outages.

- **Do you use system reliability performance results in planning, investment and maintenance expenditures, as well as establishing operation and maintenance procedures? Please explain.**

- At London Hydro, reliability performance indicators have been used to drive capital projects as well as system wide maintenance expenditures. An internal annual report, Quality of Supply Report (QSR), has been used as a tool to identify weak system components that are impacting our system performance.
- For example, rehabilitation projects such as medium voltage cable silicon injection are initiated in order to reduce the risk of cable failure hence greatly reducing customer minutes and customers affected. Also, efforts are taking place to reduce SAIFI/MAIFI through installing more lightning arrestors on the overhead system. The success of such projects can be measured by comparing historical reliability performance records to present records.

- **Do you identify and track the impacts of extraordinary events?**

- London Hydro monitors and reports, internally, Major Event Days. The “*Full-Use Guide on Electric Power Distribution Reliability Indices-1366-2001*” has been used to calculate the threshold value related to Major Event Day.

- **What other actions do you take to manage system reliability performance?**

- London Hydro produces an internal monthly report, known as the “Monthly Reliability Incident Report”. This report highlights significant outage events in each month; excluding planned outages. Significant events are events that contribute to more than 50,000 customer minutes. This is the equivalence to a SAIDI of 0.0057. Each event is looked at in more detail and is given an action item to follow by relevant departments, if applicable.