Distribution Operation Code

Power Quality Requirement

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Distribution Code Awareness Programme Funded by Akaun Amanah Industri Bekalan Elektrik (AAIBE)

Overview of Distribution Operation Code

- The Distribution Operating Code (DOC) contains requirements for operating the Distributor's Distribution System that cover supply performance requirements and coordination of Operational Planning, control and operation, reporting of outages and interruptions, monitoring of performance, and co-ordination of safety

6.5.3 Steady State Voltage Fluctuations

Steady State Voltage Level

- DPC 5.4.4 specifies the planning criteria for steady state voltage levels under normal conditions and contingency conditions and for the different classes of User. These steady state voltage levels shall also be complied with in operational timescales including Operational Planning.

- Where the Distributor has a separate agreement with a User for maintaining steady state voltage fluctuation the Distributor shall honour the requirements in accordance with the terms and conditions of such agreements.

6.5.4 Short Duration Voltage Fluctuations

Short Duration Voltage Fluctuations

- Short duration supply voltage fluctuations include voltage dips, voltage swells, momentary interruptions and temporary interruptions in supply and these events are part of the electromagnetic environment for the electrical supply network.

- Under fault and circuit switching conditions in the Distributors own Distribution System, in the Transmission System and User Systems, the voltage may fall and rise momentarily.

- The short duration fall and rise in voltage will be affected by the type of faults, location of faults, and …..

Short Duration Voltage Fluctuations

- ….earthing of the neutral points of the Transmission System, Distributor's System and User Systems.

- Short duration voltage fluctuations may also arise due to switching on the Distribution System, including the use of auto-reclosing, which gives rise to temporary interruptions.

- Short duration voltage fluctuations may also arise due to the switching of User loads and from the operation of User Equipment.

Distributor to provide PQ info to users

- Provision 5.4.5.5 of the DPC requires the Distributor to provide information upon request of Users on the expected magnitude, duration and number of short duration voltage variations for any given period of time at any monitored point in the network.

- Such information shall be used by Users connected to the Distribution System to take operational measures to eliminate or minimize the impacts of the short duration voltage fluctuations on the operation of their respective installation.

- However it is recognized that the Electromagnetic Compatibility Standards for Users Equipment such as SEMI F47 may not be fully compatible with the types of voltage fluctuations experienced on the Distribution System

6.6.3 Power Quality Related Monitoring

Records of PQ Statistics

- Section 5.11.3 of the DPC specifies the requirements for the Distributor to maintain power quality records related to harmonics and voltage dips and swells.

- The Distributor shall maintain these power quality records for selected points at the interface with Transmission System, Distributed Generators and Embedded Distributors connected to the Distribution System at Medium Voltage.

PQ Monitoring program

- The Distributor will determine the reasonable frequency of tests for monitoring of harmonic distortion levels, which shall measure performance during peak and light load periods of the Distribution System.

- Voltage dips and swells shall be monitored continuously.

- The Distributor will also carry out necessary testing and/or monitoring on receipt of any complaint on or related to power quality and/or a request for specific power quality testing and /or monitoring.

- Where testing and/or monitoring is required at the point of interfaces with the User the Distributor will advise the User of the requirement and will make the results of such tests available to the User.

Analysis of PQ Monitoring program

- Where the results of the above tests show that the power quality parameter is outside the limits specified in DPC 5.4.6.6, the Distributor shall rectify the situation as soon as is reasonably practicable if it is within the control of the Distributor.

- Where the power quality parameter outside limits is due to the characteristics of a User's connected load the Distributor will advise the User and the Distributor and User shall discuss and finalize the necessary actions to be taken by the User to rectify the situation.

- In case of disagreement, the matter shall be referred to the Energy Commission whose decision shall be final.

6.6.4 Obligations of Users to Monitor and/or Test Performance

Analysis of PQ Monitoring program

- Consumers, Embedded Distributors and Distributed Generators, on the request of the Distributor shall carry out monitoring and or testing of steady-state voltage and power quality performance on their side of the interface according to the requirements specified by the Distributor.

- This request may be made by the Distributor when he finds that electrical fluctuations in the Distribution System are more than that specified in the Distribution Code.

THANK YOU

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