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IEEE Guide for Collecting, Categorizing, and Utilizing Information Related to Electric Power Distribution Interruption Events

IEEE Power and Energy Society

Sponsored by the
Transmission and Distribution Committee

IEEE
3 Park Avenue
New York, NY 10016-5997
USA

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Abstract: Reliability of electric power systems remains an important societal issue. While transmission disturbances draw national attention and scrutiny, service interruptions at the distribution level are the primary concern of the end-use customer and their regulatory and governmental representatives. Much effort has been expended in developing methods to uniformly and consistently quantify the reliability of distribution service based on electric system performance. However, the results of a nationwide survey of recorded information used for calculating distribution reliability indices performed in 1998 by the Working Group on System Design (now Distribution Reliability) indicate that significant inconsistencies exist in the data, categorization of that data, and in the collection processes used within the industry. This guide discusses the collection, categorization, and use of information related to electric power distribution interruption events and will be used in the development of industry guidelines. This guide presents a minimal set of data and a consistent categorization structure that, when used in combination with IEEE Std 1366™, will promote consistency in how the industry collects data for the purpose of benchmarking distribution system performance.

Keywords: benchmarking, data collection, IEEE 1782™, outage management systems, power distribution reliability, reliability management, sampling methods

The Institute of Electrical and Electronics Engineers, Inc.
3 Park Avenue, New York, NY 10016-5997, USA

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*Primary author

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Introduction

This introduction is not part of IEEE Std 1782™-2014, IEEE Guide for Collecting, Categorizing, and Utilizing Information Related to Electric Power Distribution Interruption Events.

This guide was initiated by the desire of members of the working group to be able to have meaningful comparisons of reliability metrics. This guide was assembled to provide information regarding the collection, utilization, and categorization of information related to electric power distribution interruption events for the specific purpose of system reliability comparisons.

The purpose of this guide is to foster uniformity and consistency of collection of data among utilities in the trending and benchmarking of electric power distribution reliability to enable meaningful assessment of the performance of different electric utilities. In addition, this guide is intended to provide education and guidance with the assessment, trending, and benchmarking practices related to electric power distribution system reliability.

There is an industry need, given the widespread attempts to benchmark and compare electric power distribution reliability and the impact of such comparisons on key stakeholders including end-use electricity customers, utility companies, and governmental entities. The guide will describe recommended data collection, utilization, and categorization practices that should be followed to ensure fair and accurate trending and benchmark comparisons.

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IEEE Guide for Collecting, Categorizing, and Utilizing Information Related to Electric Power Distribution Interruption Events

1. Overview

1.1 Introduction

Benchmarking of distribution reliability performance has become commonplace in the electric power industry over the past several years despite the fact that useful comparisons are often difficult to make due to the data collection methods employed, differences in system design and operation, and differences in the environments. Many benchmarking studies have been established, each with its own criteria to define how data should be provided and analyzed. In order to arrive at meaningful conclusions, consistent interruption event data and categorization of that data are desirable (Werner et al. [B9]).[1] IEEE Std 1366™ has defined a methodology that, if used, will provide a common way to segment data.[2] The purpose of Interruption Reporting Practices Guide is to define data collection procedures. Clearly this is a large topic; therefore, this guide has been broken into the following three issues:

a) Data consistency and categorization for benchmarking surveys

b) Data collection within the electric power distribution industry

c) Data usage and practices

[1] The numbers in brackets correspond to those of the bibliography in Annex E.
[2] Information on references can be found in Clause 2.