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IEEE Guide for Protective Relaying of Utility-Consumer Interconnections

IEEE Power and Energy Society

Sponsored by the
Power System Relaying Committee

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IEEE Std C37.95™-2014
(Revision of
IEEE Std C37.95-2002)

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Approved 27 March 2014

IEEE-SA Standards Board

Abstract: Described in this guide are protective relay applications involving electric service to consumers that requires a transformation between the utility's supply voltage and the consumer's utilization voltage. It describes the factors that need to be considered in the design of adequate protection facilities, outlines modern relay practices, and provides several examples of the protection of typical utility-consumer interconnections.

Keywords: backup protection, breaker failure relaying, bus protection, electric service, IEEE C37.95™, non-utility generation, protective relays, transformer protection, utility-consumer interconnection

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

PDF: ISBN 978-0-7381-8980-2 STD98574
Print: ISBN 978-0-7381-8981-9 STDPD98574

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Introduction

This introduction is not part of IEEE Std C37.95™-2014, IEEE Guide for Protective Relaying of Utility-Consumer Interconnections.

This document is intended to assist engineers in the application of protective relays at the interface between the utility and consumer systems where there is transformation between the utility's supply voltage and the consumer's utilization voltage. As a practical matter, this guide applies principally to larger commercial and industrial supply facilities since it deals primarily with systems above 600 V. It is a revision of IEEE Std C37.95™-2002, IEEE Guide for Protective Relaying of Utility-Consumer Interconnections. This guide has been updated to reflect current practices, advances in technology, and the impact of non-utility generation on the utility-consumer interconnection.

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IEEE Guide for Protective Relaying of Utility-Consumer Interconnections

1. Overview

The point at which the equipment used to provide electrical service to a consumer changes ownership is usually referred to as the interconnection. However, it is important to remember that the physical laws of nature, which govern the behavior of electric power systems, apply across ownership boundaries. For a well-engineered interconnection, therefore, the electric power system protection should be studied and analyzed critically without regard to ownership.

From the viewpoint of service reliability and service continuity, it is emphasized that the best-conceived and best-implemented protective relaying system is no substitute for an adequately designed power system. Similarly, inadequately applied protective relaying will contribute to unsatisfactory performance of an otherwise well designed power system. In considering a new installation, or changes to an existing arrangement, it is very important that protective relaying and safety be given careful attention in the early stages of planning.

1.1 Scope

This guide contains information on a number of different protective relaying practices for the utility-consumer interconnection. It is intended to cover applications involving service to a consumer that normally requires a transformation between the utility's supply voltage and the consumer's utilization voltage. Interconnections supplied at the utilization voltage are not covered.

This guide is not intended to supplant specific utility or consumer practices, procedures, requirements, or any contractual agreement between the utility and consumer. The examples of interconnection protection of