

1. Purpose

The purpose of this **reliability standard** is to establish an integrated and coordinated approach to the design, evaluation, and reliable operation of **under voltage load shed** programs.

2. Applicability

This **reliability standard** applies to:

- (a) the **legal owner** of a **transmission facility** that has responsibility in an **under voltage load shed** program the **ISO** establishes;
- (b) the **legal owner** of an **electric distribution system** that has responsibility in an **under voltage load shed** program the **ISO** establishes;
- (c) a **market participant** receiving service under Rate DTS of the **ISO tariff** that has responsibility in an **under voltage load shed** program the **ISO** establishes; and
- (d) the **ISO**.

3. Requirements

R1 The **ISO** must, if it is developing an **under voltage load shed** program, evaluate its effectiveness and subsequently provide the **under voltage load shed** program's specifications and implementation schedule to the **under voltage load shed** entities responsible for implementing the **under voltage load shed** program. The evaluation must include studies and analyses that show that:

- (a) the implementation of the **under voltage load shed** program resolves the identified under voltage issues that led to its development and design; and
- (b) the **under voltage load shed** program is integrated with consideration given to the following at the discretion of the **ISO**:

coordination with **generating unit** and **aggregated generating facility** voltage ride-through capabilities and other protection and control systems, including transmission line protection, automatic reclosing, **remedial action schemes**, and other **under voltage load shed** programs or schemes.

R2 Each **legal owner** of a **transmission facility**, **legal owner** of an **electric distribution system**, and **market participant** receiving service under Rate DTS of the **ISO tariff** must adhere to the **under voltage load shed** program specifications and implementation schedule the **ISO** determines and associated with any corrective action plans in accordance with requirement R5.

R3 The **ISO** must perform a comprehensive assessment to evaluate the effectiveness of each of its **under voltage load shed** programs at least once every 60 **months**. Each assessment must include, studies and analyses that evaluate whether the **under voltage load shed** program:

- (a) resolves the identified under voltage issues for which the **under voltage load shed** program is designed; and

- (b) is integrated with consideration given to the following at the discretion of the **ISO**: coordination with **generating unit** and **aggregated generating facility** voltage ride-through capabilities and other protection and control systems, including transmission line protection, automatic reclosing, **remedial action schemes**, and other **under voltage load shed** programs or schemes.

R4 The **ISO** must, within 12 **months** of an event that resulted in a voltage excursion for which its **under voltage load shed** programs were designed to operate, perform an assessment to evaluate:

- (a) whether its **under voltage load shed** program resolved the under voltage issues associated with the event; and
- (b) the performance (i.e., operation and non-operation) of the **under voltage load shed** program equipment.

R5 The **ISO** must, when it identifies deficiencies during an assessment performed in either requirement R3 or R4, develop a corrective action plan to address the deficiencies and subsequently provide the corrective action plan, including an implementation schedule, to **under voltage load shed** entities within 3 **months** of completing the assessment in either requirement R3 or R4.

R6 The **ISO** must, if it has an **under voltage load shed** program in its area, collect data necessary to model the **under voltage load shed** program in its area for use in event analyses and assessments of the **under voltage load shed** program at least once each calendar year.

R7 Each **legal owner** of a **transmission facility**, **legal owner** of an **electric distribution system**, and **market participant** receiving service under Rate DTS of the **ISO tariff** must provide data to support maintenance of the **under voltage load shed** program, to the **ISO** according to the schedule the **ISO** specifies.

R8 The **ISO** must, if it has an **under voltage load shed** program in its area, provide its **under voltage load shed** program data to:

- (a) planning coordinators within its **Interconnection**;
- (b) **transmission planners** within its **Interconnection**; and
- (c) other entities with a **reliability** need,

within 30 **days** of a written request.

4. Measures

The following measures correspond to the requirements identified in section 3 of this **reliability standard**. For example, MR1 is the measure for requirement R1.

MR1 Evidence of evaluating **under voltage load shed** programs and providing its specifications and implementation schedule to the **under voltage load shed** entities as required in requirement R1 exists. Evidence may include date-stamped studies and analyses, reports, or other documentation detailing the effectiveness of the **under voltage load shed** program, and date-stamped communications showing that the **under voltage load shed** program specifications and implementation schedule were provided to **under voltage load shed** entities, or other equivalent evidence.

- MR2** Evidence of adhering to specifications, implementation of the **under voltage load shed** program and any corrective action plans as required in requirement R2 exists. Evidence may include date-stamped documentation on the completion of actions and may include identifying the equipment armed with **under voltage load shed** relays, the **under voltage load shed** relay settings, associated load summaries, work management program records, work orders, and maintenance records, or other equivalent evidence.
- MR3** Evidence of performing a comprehensive assessment to evaluate the effectiveness of each **under voltage load shed** program as required in requirement R3 exists. Evidence may include date-stamped reports or other documentation detailing the assessment of each **under voltage load shed** program, or other equivalent evidence.
- MR4** Evidence of performing an assessment to evaluate the **under voltage load shed** program as required in requirement R4 exists. Evidence may include date-stamped event data, event analysis reports, or other documentation detailing the assessment of the **under voltage load shed** program and performance of the associated equipment, or other equivalent evidence.
- MR5** Evidence of developing a corrective action plan and providing it to **under voltage load shed** entities as required in requirement R5 exists. Evidence may include:
- a date-stamped corrective action plan that addresses identified deficiencies and may also include date-stamped reports or other documentation supporting the corrective action plan;
 - date-stamped communications showing that the corrective action plan and an associated implementation schedule were provided to **under voltage load shed** entities, or
 - other equivalent evidence.
- MR6** Evidence of collecting data necessary to model each **under voltage load shed** program as required in requirement R6 exists. Evidence may include date-stamped spreadsheets, data reports, or other documentation demonstrating the **under voltage load shed** program data was updated, or other equivalent evidence.
- MR7** Evidence of providing data to the **ISO** in accordance with requirement R7 exists. Evidence may include date-stamped emails, letters, or other documentation demonstrating data was provided to the **ISO** as specified, or other equivalent evidence.
- MR8** Evidence of providing its **under voltage load shed** data as required in requirement R8 exists. Evidence may include date-stamped emails, letters, or other documentation demonstrating that the **under voltage load shed** program data was provided within 30 **days** of receipt of a written request, or other equivalent evidence.

Revision History

Date	Description
2022-01-01	Initial release.