

## Standard PRC-020-1 — Under-Voltage Load Shedding Program Database

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### Standard Development Roadmap

*This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.*

This proposed standard is a translation of planning measure III.E.M2, which was not included in the approval Version 0 reliability standards because it required further work.

#### Development Steps Completed:

1. A SAR was posted from December 2, 2004 through January 7, 2005.
2. The SAC appointed a standard drafting team on January 13, 2005.
3. The drafting team posted its response to SAR comments and all other historical comments on April 1, 2005.
4. Drafting team posted drafts for comment (April 21–June 13, 2005) (September 1–October 15, 2005).
5. The drafting team posted the standards and implementation plan for a 30-day pre-ballot review from December 1–30, 2005.
6. First ballot conducted from January 9–19, 2005.
7. Recirculation ballot was conducted from January 25–February 3, 2006.

#### Description of Current Draft:

Final draft for board adoption.

#### Future Development Plan:

Anticipated Actions	Anticipated Date
1. Board adoption.	February 7, 2006
2. Effective date.	May 1, 2006

**Definitions of Terms Used in Standard**

*This section includes all newly defined or revised terms used in the proposed standard. Terms already defined in the Reliability Standards Glossary of Terms are not repeated here. New or revised definitions listed below become approved when the proposed standard is approved. When the standard becomes effective, these defined terms will be removed from the individual standard and added to the Glossary.*

No new definitions are proposed for this standard.

**A. Introduction**

1. **Title:** Under-Voltage Load Shedding Program Database
2. **Number:** PRC-020-1
3. **Purpose:** Ensure that a regional database is maintained for Under-Voltage Load Shedding (UVLS) programs implemented by entities within the Region to mitigate the risk of voltage collapse or voltage instability in the Bulk Electric System (BES). Ensure the UVLS database is available for Regional studies and for dynamic studies and simulations of the BES.
4. **Applicability**
  - 4.1. Regional Reliability Organization with entities that own or operate a UVLS program.
5. **Proposed Effective Date:** May 1, 2006

**B. Requirements**

- R1. The Regional Reliability Organization shall establish, maintain and annually update a database for UVLS programs implemented by entities within the region to mitigate the risk of voltage collapse or voltage instability in the BES. This database shall include the following items:
  - R1.1. Owner and operator of the UVLS program.
  - R1.2. Size and location of customer load, or percent of connected load, to be interrupted.
  - R1.3. Corresponding voltage set points and overall scheme clearing times.
  - R1.4. Time delay from initiation to trip signal.
  - R1.5. Breaker operating times.
  - R1.6. Any other schemes that are part of or impact the UVLS programs such as related generation protection, islanding schemes, automatic load restoration schemes, UFLS and Special Protection Systems.
- R2. The Regional Reliability Organization shall provide the information in its UVLS database to the Planning Authority, the Transmission Planner, or other Regional Reliability Organizations and to NERC within 30 calendar days of a request.

**C. Measures**

- M1. The Regional Reliability Organization shall have evidence that it established and annually updated its UVLS database to include all elements in Requirement 1.1 through 1.6.
- M2. The Regional Reliability Organization shall have evidence that it provided the information in its UVLS database to the requesting entities and to NERC in accordance with Requirement 2.

**D. Compliance**

1. **Compliance Monitoring Process**
  - 1.1. **Compliance Monitoring Responsibility**

NERC
  - 1.2. **Compliance Monitoring Period and Reset Time Frame**

One calendar year.
  - 1.3. **Data Retention**

The Regional Reliability Organization shall retain the current and prior annual updated database. The Compliance Monitor shall retain all audit data for three years.

**1.4. Additional Compliance Information**

The Regional Reliability Organization shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.

**2. Levels of Non-Compliance**

**2.1. Level 1:** Did not update its UVLS database annually.

**2.2. Level 2:** UVLS program database information provided, but did not include all of the items identified in R1.1 through R1.6.

**2.3. Level 3:** Not applicable.

**2.4. Level 4:** Did not provide information from its UVLS program database.

**E. Regional Differences**

None identified.

**Version History**

<b>Version</b>	<b>Date</b>	<b>Action</b>	<b>Change Tracking</b>
1	12/01/05	<ol style="list-style-type: none"> <li>1. Removed comma after 2004 in “Development Steps Completed,” #1.</li> <li>2. Changed incorrect use of certain hyphens (-) to “en dash” (–) and “em dash (—).”</li> <li>3. Lower cased the word “region,” “board,” and “regional” throughout document where appropriate.</li> <li>4. Added or removed “periods” where appropriate.</li> <li>5. Changed “Timeframe” to “Time Frame” in item D, 1.2.</li> </ol>	01/20/06

**Standard Development Roadmap**

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This proposed standard is a translation of planning measure III.E.M1, which was not included in the approval Version 0 reliability standards because it required further work.

**Development Steps Completed:**

1. A SAR was posted from December 2, 2004 through January 7, 2005.
2. The SAC appointed a standard drafting team on January 13, 2005.
3. The drafting team posted its response to SAR comments and all other historical comments on April 19, 2005.
4. Drafting team posted drafts for comment (April 21–June 13, 2005) (September 1–October 15, 2005).
5. The drafting team posted the standards and implementation plan for a 30-day pre-ballot review from December 1–30, 2005.
6. First ballot conducted from January 9–19, 2005.
7. Recirculation ballot was conducted from January 25–February 3, 2006.

**Description of Current Draft:**

Final draft for board adoption.

**Future Development Plan:**

<b>Anticipated Actions</b>	<b>Anticipated Date</b>
1. Board adoption.	February 7, 2006
2. Effective date.	August 1, 2006

**Definitions of Terms Used in Standard**

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No new definitions are proposed for this standard.

**A. Introduction**

- 1. Title:** Under-Voltage Load Shedding Program Data
- 2. Number:** PRC-021-1
- 3. Purpose:** Ensure data is provided to support the Regional database maintained for Under-Voltage Load Shedding (UVLS) programs that were implemented to mitigate the risk of voltage collapse or voltage instability in the Bulk Electric System (BES).
- 4. Applicability**
  - 4.1.** Transmission Owner that owns a UVLS program.
  - 4.2.** Distribution Provider that owns a UVLS program.
- 5. Proposed Effective Date:** August 1, 2006

**B. Requirements**

- R1.** Each Transmission Owner and Distribution Provider that owns a UVLS program to mitigate the risk of voltage collapse or voltage instability in the BES shall annually update its UVLS data to support the Regional UVLS program database. The following data shall be provided to the Regional Reliability Organization for each installed UVLS system:
  - R1.1.** Size and location of customer load, or percent of connected load, to be interrupted.
  - R1.2.** Corresponding voltage set points and overall scheme clearing times.
  - R1.3.** Time delay from initiation to trip signal.
  - R1.4.** Breaker operating times.
  - R1.5.** Any other schemes that are part of or impact the UVLS programs such as related generation protection, islanding schemes, automatic load restoration schemes, UFLS and Special Protection Systems. .
- R2.** Each Transmission Owner and Distribution Provider that owns a UVLS program shall provide its UVLS program data to the Regional Reliability Organization within 30 calendar days of a request.

**C. Measures**

- M1.** Each Transmission Owner and Distribution Provider that owns a UVLS program shall have documentation that its UVLS data was updated annually and includes all items specified in Requirement 1.1 through 1.5.
- M2.** Each Transmission Owner and Distribution Provider that owns a UVLS program shall have evidence it provided the Regional Reliability Organization with its UVLS program data within 30 calendar days of a request.

**D. Compliance**

- 1. Compliance Monitoring Process**
  - 1.1. Compliance Monitoring Responsibility**

Regional Reliability Organization.
  - 1.2. Compliance Monitoring Period and Reset Time Frame**

One calendar year.
  - 1.3. Data Retention**

## Standard PRC-021-1 — Under-Voltage Load Shedding Program Data

Each Transmission Owner and Distribution Provider that owns a UVLS program shall retain a copy of the data submitted over the past two years.

The Compliance Monitor shall retain all audit data for three years.

### 1.4. Additional Compliance Information

Transmission Owner and Distribution Provider shall demonstrate compliance through self-certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.

## 2. Levels of Non-Compliance

**2.1. Level 1:** Did not update its UVLS data annually.

**2.2. Level 2:** UVLS data was provided, but did not address one of the items identified in R1.1 through R1.5.

**2.3. Level 3:** UVLS data was provided, but did not address two or more of the items identified in R1.1 through R1.5.

**2.4. Level 4:** Did not provide any UVLS data.

## E. Regional Differences

None identified.

## Version History

Version	Date	Action	Change Tracking
1	12/01/05	<ol style="list-style-type: none"><li>1. Removed comma after 2004 in “Development Steps Completed,” #1.</li><li>2. Changed incorrect use of certain hyphens (-) to “en dash” (–) and “em dash (—).”</li><li>3. Added heading above table “Future Development Plan.”</li><li>4. Lower cased the word “region,” “board,” and “regional” throughout document where appropriate.</li><li>5. Added or removed “periods” where appropriate.</li><li>6. Changed “Timeframe” to “Time Frame” in item D, 1.2.</li></ol>	01/20/05

**Standard Development Roadmap**

*This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.*

This proposed standard is a translation of planning measure III.E.M5, which was not included in the approval Version 0 reliability standards because it required further work.

**Development Steps Completed:**

1. A SAR was posted from December 2, 2004 through January 7, 2005.
2. The SAC appointed a standard drafting team on January 13, 2005.
3. The drafting team posted its response to SAR comments and all other historical comments on April 19, 2005.
4. Drafting team posted drafts for comment (April 21–June 13, 2005) (September 1–October 15, 2005).
5. The drafting team posted the standards and implementation plan for a 30-day pre-ballot review from December 1–30, 2005.
6. First ballot conducted from January 9–19, 2005.
7. Recirculation ballot was conducted from January 25–February 3, 2006.

**Description of Current Draft:**

Final draft for board adoption.

**Future Development Plan:**

<b>Anticipated Actions</b>	<b>Anticipated Date</b>
1. Board adoption.	February 7, 2006
2. Effective date.	May 1, 2006

**Definitions of Terms Used in Standard**

*This section includes all newly defined or revised terms used in the proposed standard. Terms already defined in the Reliability Standards Glossary of Terms are not repeated here. New or revised definitions listed below become approved when the proposed standard is approved. When the standard becomes effective, these defined terms will be removed from the individual standard and added to the Glossary.*

No new definitions are proposed for this standard.

**A. Introduction**

- 1. Title:** Under-Voltage Load Shedding Program Performance
- 2. Number:** PRC-022-1
- 3. Purpose:** Ensure that Under Voltage Load Shedding (UVLS) programs perform as intended to mitigate the risk of voltage collapse or voltage instability in the Bulk Electric System (BES).
- 4. Applicability**
  - 4.1.** Transmission Operator that operates a UVLS program.
  - 4.2.** Distribution Provider that operates a UVLS program.
  - 4.3.** Load-Serving Entity that operates a UVLS program.
- 5. Proposed Effective Date:** May 1, 2006

**B. Requirements**

- R1.** Each Transmission Operator, Load-Serving Entity, and Distribution Provider that operates a UVLS program to mitigate the risk of voltage collapse or voltage instability in the BES shall analyze and document all UVLS operations and Misoperations. The analysis shall include:
  - R1.1.** A description of the event including initiating conditions.
  - R1.2.** A review of the UVLS set points and tripping times.
  - R1.3.** A simulation of the event, if deemed appropriate by the Regional Reliability Organization. For most events, analysis of sequence of events may be sufficient and dynamic simulations may not be needed.
  - R1.4.** A summary of the findings.
  - R1.5.** For any Misoperation, a Corrective Action Plan to avoid future Misoperations of a similar nature.
- R2.** Each Transmission Operator, Load-Serving Entity, and Distribution Provider that operates a UVLS program shall provide documentation of its analysis of UVLS program performance to its Regional Reliability Organization within 90 calendar days of a request.

**C. Measures**

- M1.** Each Transmission Operator, Load-Serving Entity, and Distribution Provider that operates a UVLS program shall have documentation of its analysis of UVLS operations and Misoperations in accordance with Requirement 1.1 through 1.5.
- M2.** Each Transmission Operator, Load-Serving Entity, and Distribution Provider that operates a UVLS program shall have evidence that it provided documentation of its analysis of UVLS program performance within 90 calendar days of a request by the Regional Reliability Organization.

**D. Compliance**

- 1. Compliance Monitoring Process**
  - 1.1. Compliance Monitoring Responsibility**

Regional Reliability Organization.
  - 1.2. Compliance Monitoring Period and Reset Time Frame**

One calendar year.

**1.3. Data Retention**

Each Transmission Operator, Load-Serving Entity, and Distribution Provider that operates a UVLS program shall retain documentation of its analyses of UVLS operations and Misoperations for two years. The Compliance Monitor shall retain any audit data for three years.

**1.4. Additional Compliance Information**

Transmission Operator, Load-Serving Entity, and Distribution Provider shall demonstrate compliance through self-certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.

**2. Levels of Non-Compliance**

**2.1. Level 1:** Not applicable.

**2.2. Level 2:** Documentation of the analysis of UVLS performance was provided but did not include one of the five requirements in R1.

**2.3. Level 3:** Documentation of the analysis of UVLS performance was provided but did not include two or more of the five requirements in R1.

**2.4. Level 4:** Documentation of the analysis of UVLS performance was not provided.

**E. Regional Differences**

None identified.

**Version History**

<b>Version</b>	<b>Date</b>	<b>Action</b>	<b>Change Tracking</b>
1	12/01/05	<ol style="list-style-type: none"> <li>1. Removed comma after 2004 in “Development Steps Completed,” #1.</li> <li>2. Changed incorrect use of certain hyphens (-) to “en dash” (–) and “em dash (—).”</li> <li>3. Lower cased the word “region,” “board,” and “regional” throughout document where appropriate.</li> <li>4. Added or removed “periods” where appropriate.</li> <li>5. Changed “Timeframe” to “Time Frame” in item D, 1.2.</li> </ol>	01/20/06