



**Process for NERC Standard PRC-006-2 (External):
Automatic Underfrequency Load Shedding
Version: 1.0
Applicability: Planning Coordinator (PC)**

Planning Coordinator (PC) Process:

This process ensures that BPA establishes design and documentation requirements for automatic underfrequency load shedding (UFLS) programs to arrest declining frequency, assist recovery of frequency following underfrequency events and provide last resort system preservation measures.

Designated Agent Responsibility

BPA has a General Services Agreement (GSA) with Northwest Power Pool (NWPP) to act as BPA's agent for the purpose of carrying out the coordination required in this standard. NWPP serves as a Sub-Area Coordinator for the WECC Regional Entity Area coordinating UFLS requirements with all PC's within WECC.

A) UFLS Criteria

- 1) BPA participates in a joint regional review with the other PC's in the WECC Regional Entity Area through the GSA with NWPP. The requirement to review, develop, and document criteria is satisfied by the annual UFLS design assessment. (Requirement D.B.1, D.B.2.0, 2.1, 2.2)
 - a) TPC is point of contact within BPA for NWPP in relation to this Standard. After the assessment is completed by the WECC UFLS Review group, the Underfrequency Load Shedding NWPP Committee reviews the results and participates in any required program
 - b) Annually (typically by 7/1) TPC provides the WECC Attachment B to NWPP for use in reviewing criteria and development of the Annual WECC Underfrequency Load Shedding Assessment Report.
 - c) The GSA and applicable sections of the Annual WECC Underfrequency Load Shedding Assessment Report are evidence for the coordination to meet these requirements.

B) UFLS Program Implementation and Maintenance

- 1) BPA has adopted the NWPP Sub-Area Coordinated Plan which has been designed to meet the UFLS program performance characteristics, criteria, notification and schedule of implementation described under Requirement D.B.3. Evidence of BPA's compliance is the GSA and applicable sections of the Annual WECC Underfrequency Load Shedding Assessment Report. (Requirement D.B. 3, 3.1, 3.2, 3.3, 3.3.1, 3.3.2, 3.3.3)
- 2) TPC will participate annually (through NWPP) in a coordinated UFLS design assessment that meets the technical requirements of Requirement D.B.4 inclusive. Evidence of BPA's compliance is the GSA and applicable sections of the Annual WECC Underfrequency Load Shedding Assessment Report. Note: the standard calls for an assessment at least once every 5 years, but WECC policy is to perform the assessment annually. (Requirements D.B.4, D.B.4.1 through D.B.4.7)

- a) If the annual design assessment determines that the UFLS program does not meet the performance characteristics of the NWPP Sub-Area Coordinated Plan (Requirement 3), then BPA will develop a dated Corrective Action Plan and schedule for implementation by the UFLS Active Participants within BPA's PC Area. The Corrective Action Plan will be developed within the same time period as Requirement D.B.4 (Requirement 15, 15.1)
- 3) TPC will maintain BPA's UFLS database, used to model BPA's UFLS program, at least once each calendar year, with no more than 15 months between maintenance activities. Evidence is WECC Attachment B. (Requirement 6)
 - 4) Process to develop WECC Attachment B (Note timeline is approximate and dependent on NWPP and WECC deadlines) (Requirement 6):
 - a) TPC sends email request to update and verify UFLS data to active UFLS participants and Transmission Owners (if applicable) within BPA's BA area. Active participants are BPA's registered Distribution Provider customers that have armed UFLS equipment.
 - b) TPC receives input from active participants, reviews and begins preparation of WECC Attachment B document. Return of this information is the active participants' and Transmission Owners' response to Requirement 8, 9, and 10.
 - c) TPC uses the FERC 714 Report in the creation of WECC Attachment B (i.e. the previous year's peak load is put into the model for calculation). The spreadsheet compares base case model load to the previous year's actual peak balancing authority load. The goal is for the result to be 34% or more.
 - d) TPC sends email request to update and verify UFLS data to active UFLS participants and Transmission Owners (if applicable) within BPA's BA area. Active participants are BPA's registered Distribution Provider customers that have armed UFLS equipment.
 - e) TPC receives input from active participants, reviews and begins preparation of WECC Attachment B document. Return of this information is the active participants' and Transmission Owners' response to Requirement 8, 9, and 10.
 - f) TPC receives input from BPA SPC Districts, reviews and begins preparation of WECC Attachment B document.
 - g) TPC will send WECC Attachment B tab 2 to TPP and TPM for them to develop WECC Attachment B tab 3 (PSLF data).
 - h) TPM creates the WECC Attachment B PSLF tab 3 and returns to TPC.
 - i) TPM sends Dynamics Data (DYD) file (derived from WECC Attachment B tab 3) to WECC Grid Modeling.
 - j) TPC uses the FERC 714 Report in the creation of WECC Attachment B (i.e. the previous year's peak load is put into the model for calculation). The spreadsheet compares base case model load to the previous year's actual peak balancing authority load. The goal is for the result to be 34% or more.
 - k) TPC incorporates the PSLF tab 3 into WECC Attachment B.
 - l) TPC submits final WECC Attachment B to NWPP and WECC. Note: The 4/1 7/1 date is derived from a data request from WECC.

- 5) TPC will respond to written comments from UFLS entities (including BPA's internal SPC) and Transmission Owners within BPA's PC Area following a comment period before finalizing its UFLS program. Evidence is needed for this in the case of a UFLS program change or an actuation event. If no comment period occurred, then TPC will provide an attestation stating such. (Requirement 14)
 - a) Written response to comments will state whether changes will be made or reasons why changes will not be made to:
UFLS program, including a schedule for implementation (Requirement 14.1)
UFLS design assessment (Requirement 14.2)
Format and schedule of UFLS data submittal (Requirement 14.3)

C) UFLS Program Distribution

- 1) Within 30 days of a request, TPC will provide BPA's UFLS database containing data necessary to model BPA's UFLS program to other PC's within BPA's interconnection area. (Requirement 7)
 - a) If no requests were received, BPA will create an attestation to this effect.
 - b) PC's can request a copy of BPA's UFLS database by emailing the Customer Service Reliability Program Mailbox in "b" below and referencing PRC-006.
 - c) CSReliabilityProgram@bpa.gov
 - d) If TPC receives a request directly they will send the initial email to the CSRP Mailbox in order for CSRP to monitor the 30 day time response.

D) Receiving UFLS Program Data

- 1) Data is received by BPA from UFLS entities (Active UFLS Participants and BPA SPC) and Transmission Owners (if applicable) per BPA's request (see process for Requirement 6). (Requirement 8, 9, 10) UFLS entities will provide:
 - a) Data to support maintenance of BPA's UFLS database (Requirement 8)
 - b) Automatic tripping of Load in accordance with BPA's UFLS program design and schedule (Requirement 9)
 - c) Automatic switching of existing capacitor banks, Transmission Lines and reactors to control over-voltage as a result of underfrequency load shedding if required by BPA's UFLS program and schedule. (Requirement 10)

E) Assessment for Event Actuation

- 1) Within 1 year of an islanding event actuation, where BPA experienced system frequency excursions below the initializing set points of our UFLS program, TPC will participate (through NWPP) in a coordinated event assessment and documentation with all affected PC's. Assessment will evaluate: (Requirement D.B.11) Evidence is an attestation if no islanding event occurred.
- 2) Within 2 years of an islanding event actuation identified in Requirement D.B.11, TPC will participate (through NWPP) in a coordinated UFLS design assessment and documentation of the UFLS program with other PC's in WECC to consider the identified deficiencies. (Requirement D.B.12) Evidence is an attestation if no islanding event occurred.

- a) If an islanding event occurs and the assesemnt from Requirment D.B.12 determines that the UFLS program does not meet the performance characteristics of the NWPP Sub-Area Coordinated Plan (Requirement D. B.3), then BPA will develop a dated Corrective Action Plan and schedule for implementation by the UFLS Active Participants within BPA's PC Area. The Corrective Action Plan will be developed within the same time 2 year period as Requirement D.B.12 (Requirement 15, 15.2)

Definitions:

TPC - BPA Customer Service Engineering