

Southwest Power Pool

201 Worthen Drive

Little Rock, AR 72223-4936

October 1, 2020

All Transmission Owners, Distribution Provider, and Generator Owner Primary

Compliance Contacts:

To fulfill the requirements of PRC-006 and PRC-024, the Southwest Power Pool (SPP) Planning Coordinator (PC) will request the UFLS and Generation Protection data annually not to exceed fifteen months via GlobalScape and Email.

This document contains specific guidelines on the “Under Frequency Load Shedding” (UFLS) and “Generator Frequency and Voltage Protective Relay Settings” data submittal.

The SPP PC is requesting data from:

- TOs and DPs that shed load
- GOs that own generation protection equipment
- Entities that have UFLS equipment inside the SPP PC footprint
- Entities that own Armed Automatic Load Restoration (ALR) relays

This document provides instructions on completing the data request. The “Attestation Form”, “Dynamic Stability Model”, “UFLS Model Database (DB)”, and “Entity UFLS Inventory DB”, “Generation Protection Inventory” and are used to support the data request.

Check List

TO/DP/GO Entities Not Applicable to PRC-006 and PRC-024

- Post completed and signed Attestation Form.

TO/DP Entities Applicable to PRC-006

- Post completed and signed Attestation Form.
- Post updated UFLS Model DB in Entity Folder.

Mark all owned elements on the tabs; Available Loads, Available Branches, Available 2-Winding Transformers, and 3-Winding Transformers by selecting the appropriate entity code from the dropdown list in column A.

- Post updated UFLS Entity Inventory DB in the Entity Folder.

Complete the form on the Info tab. Fill in the "Total Load" on the Details tab with the total calculated from the UFLS Model DB Details worksheet. Complete the Load Shed, and ALR spreadsheets.

GO Entities Applicable to PRC-024 and PRC-006 R4.1-4.6

- Post completed and signed Attestation Form.
- Post updated Generation Protection Inventory Workbook Attached to the Data Request.

Complete the form on the Info tab. Complete the Gen Freq Shed and Gen Volt Shed spreadsheets.

Note: Only one Attestation is required for each Entity. If you are submitting for more than one NCR ID please list all NCR IDs and Entity name in the box provided in the Attestation Form.

Data Posting

The SPP PC has a secure cloud data service, [GlobalScape](#), for posting UFLS and Generation Protection data requested material. TO/DP/GOs who are authorized to use this service will post their Entity data in the Entity assigned folder.

[GlobalScape](#)

- ↳ Compliance and Advanced Studies (CEII, RSD)
 - ↳ “Individual TO, DP, and GO by NCR Number” (sub-folder)
 - ↳(PRC-006 or PRC-024)
 - ↳Year

Note: DO NOT post data in the root folder “CAS (Global Access)” on [GlobalScape](#).

Example: The DP “ABC” will post their signed Attestation Form and Inventory Spreadsheet in the sub-folder “ABC” within [GlobalScape](#).

The SPP PC entities who are restricted from using a cloud service will email their requested material to the following address

For **PRC-006** please use UFLS@SPP.org. Please use **PRC-006** in the subject line of the email.

For **PRC-024** please use PlanningCoordinator@spp.org. Please use **PRC-024** in the subject line of the email.

If you have any questions please contact the SME.

Subject Matter Expert (SME)

Nathan E. Bean
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Attestation Form

All SPP PC entities shall complete, sign, and post the required Attestation Form regarding ownership of Automatic Underfrequency Load Shed (UFLS), Automatic Load Restoration (ALR) relays, generator protective relays, and/or automatic equipment used to control over-voltage as a result of Underfrequency load shedding. Also indicate if your entity reports data on behalf of itself, its membership, or other TO, DP, or GOs.

Dynamic Stability Model

The SPP planning stability model and power flow to use for this data request is the 2019 Model Development Working Group, 2022 Summer Peak Dynamic Stability model (example - 2018 MDWG 2019S Final).

The UFLS Model is posted on:

[GlobalScape](#)

↳ Compliance and Advanced Studies (CEII, RSD)

↳ CAS (Global Access)

↳ East

↳ (PRC-006 or PRC-024)

↳ Year

Note: Access to the models is controlled through CEII. If your entity requires access to these models please send a request to UFLS@SPP.org for PRC-006 and PlanningCoordinator@spp.org for PRC-024.

UFLS Model DB

The UFLS Model DB contains the current powerflow model bus, load, branch, and transformer data. The UFLS Model DB can be used as the source data to update the UFLS Inventory DB. The UFLS Model DB is posted in the CAS (Global Access) folder on [GlobalScape](#).

The SPP PC UFLS Entities will mark all loads in the UFLS Model DB, tab “Available Loads”, by placing entity abbreviated code in column A – “Controller” for the entity that owns the relay, and column B – “Owner” for the entity that owns the load.

Note: If the load is does not have a relay the owner of the load is considered the “Controller” and “Owner”.

Example 1: Entity ABC trips entity DEF’s load. In this case both entity ABC and DEF will mark load with column A – “ABC” and column B – “DEF”.

Example 2: Entity ABC owns a load but has no relay associated. In this case entity ABC will mark the load with column A – “ABC” and column B – “ABC”.

In accordance with the most recent UFLS Plan, reporting Entities have the option of not counting generator auxiliary loads for UFLS purposes. Generator auxiliary loads that are not to be tallied shall be listed in the model database as “AUX” in the owner column. The reporting Entity shall continue to list the Entity name as the controller.

UFLS entities will also mark branches and transformers that trip per the SPP PC UFLS Plan.

Entity UFLS Inventory DB

The entity UFLS Inventory Database (DB) includes prepopulated load shed, branch shed, and automatic load restoration data. The initial request for data should be considered draft since the data has been transformed from last year’s model to the current UFLS model. The data is posted in the assigned folder for the UFLS entity.

The UFLS entity will validate/populate the data in the Inventory DB.

INFO (INFORMATION)

Update the entity name, NERC NCR ID#, primary and secondary contact information (name, phone number, and emails address).

DETAILS

The reported UFLS entity “Total Load (MW)” is the sum of that Entities “Total Forecasted Peak Load” as it is modeled in the “Dynamic Stability Model”. Please refer to your Model Database workbook and copy the value from the “Details” tab cell B4 into this field.

LOAD SHED

The initial draft version of the Inventory DB posted by SPP PC contains load shed by frequency based on the previously submitted UFLS data for your entity, i.e. 2014. The previous load values have been replaced with the current models values. If the load bus number was changed from the previous model the data will NOT appear in this

spreadsheet. Also, it may be possible for new loads to have been introduced into the current model, so take care to include those as necessary. Loads that have been removed from the previous model have been removed from this spreadsheet.

Load shed amounts (P_x) are estimates from the previously submitted UFLS data and represent the sum of all distribution feeder loads tripped. The load shed at a specific frequency (F_R) is the new models load (P_L) multiplied by the fraction of the previous data submittal for that load.

P_x = aggregated load shed with ID at frequency setpoint.

P_L = load with ID in model.

F_R = frequency setpoint.

Check all UFLS loads. Some loads from the previous data submittal may not be included in the current powerflow model used in this update, for example the load was converted to another voltage. If you need to add loads to shed use the current Model DB load values as your reference source. Columns now exist to enter the Step Frequencies; step 1 frequency is for 59.3 HZ, step 2 frequency is for 59.0 HZ, and step 3 frequency is for 58.7 HZ.

Off nominal frequency trip settings should be entered within the closest step that is lower than the off-nominal frequency. Example: 59.1 HZ trip setting would go in step 2 and 58.8 HZ (< 58.7 HZ) would go in Step 3. Only loads shed in Step 1 through Step 3 (≥ 58.7 HZ) count towards UFLS load shed per the UFLS Plan. Trip settings below 58.7 HZ go in Step 3.

BRANCH SHED

Refer to “Definitions” worksheet for data details. Use the Model DB to complete the Branch Information.

AUTOMATIC LOAD RESTORATION (ALR)

Refer to “Definitions” for data details. Use the Model DB to complete the ALR data.

DEFINITIONS

This worksheet includes definitions on requested data.

[Entity Generation Protection Inventory Workbook \(PRC-024\)](#)

The entity will populate the data in the Generation Protection Inventory Workbook attached to the Data Request.

INFO (INFORMATION)

Update the entity name, NERC NCR ID#, primary and secondary contact information (name, phone number, and emails address).

GEN FREQ SHED

Refer to “Definitions” worksheet for data details.

GEN VOLT SHED

Refer to “Definitions” worksheet for data details.

DEFINITIONS

This worksheet includes definitions on requested data.

Please contact the SPP PC Subject Matter Expert (SME) by phone, or by email with any questions.

Sincerely,
Nathan E. Bean

Revision History

Date or Version Number	Author	Change Description	Comments
9/30/2013	Harvey Scribner	Original	V 0
10/8/2013	Dee Edmondson	Revision	V1
10/30/2013	Harvey Scribner	Revision	V2, Send to: MEAM, TSGT, BEPC, CNP PID, USACE-NWO, WAPA.
4/5/2014	Harvey Scribner	Revision	V3, Send to: WAPA, Basin, Heartland
4/7/2014	Harvey Scribner	Addendum	V4
4/8/2014	Harvey Scribner	Addendum, submittal open period date change	V5
12/9/2014	Harvey Scribner	UFLS Plan Rev. 3.1, Appendix E, revised for Inventory Workbook database	V6
10/5/2015	Harvey Scribner	UFLS Plan Rev. 4.2, PRC-006-2, and include GO participation.	V7
9/30/2016	Charles Hendrix	UFLS Plan Rev 4.3	V8

9/18/2017	Jeff McDiarmid	Submittal period date change	V8.1
8/16/2018	Nathan Bean	Submittal period date, and TrueShare to GlobalScape	V8.2
6/16/2020	Nathan Bean	Update to include PRC-024-2	V 9.0