Southwest Power Pool
201 Worthen Drive
Little Rock, AR 72223-4936
October 2, 2017

All Transmission Owners, Distribution Provider, and Generator Owner Primary
Compliance Contacts:

To fulfill the requirements of PRC-006-2, the Southwest Power Pool (SPP) Planning
Coordinator (PC) will request UFLS data annually not to exceed fifteen months via
TrueShare and Email.

This document contains specific guidelines on the Under Frequency Load Shedding (UFLS)
data submittal. Guidelines on completing the UFLS Inventory Database (DB) are based on
SPP UFLS Plan, Section 9 – UFLS Entity Data Submittal & Generator Owner Data Submittal.

The SPP PC is requesting data from:

- TOs and DPs that shed load
- GOs that shed generation in the no-trip zone
- 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” and are used to support the data request.

Check List

TO/DP/GO Non-UFLS Entity

☐ Post completed and signed Attestation Form.

TO/DP/GO UFLS Entity & (GOs that shed generation in the no-trip zone)

☐ Post completed and signed Attestation Form.

☐ Post updated UFLS Model DB in Entity Folder.

  Mark all owned elements on the tabs; Available Loads, Available Machines,
  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, Gen Shed, and ALR spreadsheets.

Data Posting

The SPP PC has a secure cloud data service, www.TrueShare.com, for posting UFLS data requested material. Entities who are authorized to use this serve will post their data in the Entity assigned folder in “SPP UFLS Plan Data”.

www.TrueShare.com
⇒ SPP UFLS Plan Data
⇒ “Individual Entity Folder” (sub-folder)


Example: The DP “ABC” will post their signed Attestation Form, Inventory Database, and Model Database in the sub-folder “ABC” within www.TrueShare.com.

The SPP PC entities who are restricted from using a cloud service will email their requested material to the address UFLS@SPP.org. Please use UFLS in the subject line of the email. If you have any questions please contact the SME.

Subject Matter Expert (SME)

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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 UFLS Plan data on behalf of itself, its membership, or other TO, DP, or GOs.

Dynamic Stability Model

SPP PC is collecting UFLS data in 2017. The SPP planning stability model and power flow (UFLS Model) used for this data request is the 2017 Model Development Working Group’s 2018 Summer Peak Dynamic Stability model (2017 MDWG 2018S Final).
The 2017 UFLS Model is posted on:

www.TrueShare.com
SPP UFLS Plan Data
Models
→ 2017

Note: The folder “Models -> 2017” contains the 2018 Summer Peak dynamics model used in the 2017 UFLS request for data. Access to the models is controlled through CEII. If your entity requires access to these models please send a request to UFLS@SPP.org.

UFLS Model Database (DB)

The UFLS Model Database (DB) contains the current powerflow model bus, load, machine, branch, and transformer data. The UFLS Model DB must be used as the source data to update the UFLS Inventory DB. The UFLS Model DB is posted in the Model folder on www.TrueShare.com.

The SPP PC UFLS Entities will mark all their entity loads in the UFLS Model DB tab “Available Loads” by selecting their entity name from the dropdown list for controller and owner.

Note: If your entity does not appear in this list please add it to the “Reference Entities” worksheet at the end of the last entity entry in column A or column B. Once added, the entity code will appear in the dropdown list.

Entities whose relays control loads other than their own can account for these external loads by marking the load with a combination of the controller and owner entity name. The Entity will need to populate the owner and controller names in separate columns of the model database. The Entity who owns and controls the UFLS relay should be listed as controller and the Entity whose load is tripped should be listed as the owner.

In accordance with the most recent UFLS Plan v4.3, reporting Entities have the option of not counting generator auxiliary loads for UFLS purposes. Generator auxiliary loads that are not 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 machines, 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, generation 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). For entity code, select the appropriate code from the dropdown list. If the code corresponding to your entity is missing please add it to the “Reference Entities” tab (last tab in the workbook). Once added, it should show up in the dropdown list.

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. 2016. 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 \( \mathbf{P_X} \) 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 \( \mathbf{F_R} \) is the new model’s load \( \mathbf{P_L} \) multiplied by the fraction of the previous data submittal for that load.

\[
\mathbf{P_X} = \text{aggregated load shed with ID at frequency setpoint.}
\]
\[
\mathbf{P_L} = \text{load with ID in model.}
\]
\[
\mathbf{F_R} = \text{frequency setpoint.}
\]

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 is 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.

**Gen Shed**

Refer to “Definitions” worksheet for data details. Use the Model DB to complete the Gen Shed data.

**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.

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

Sincerely,

Charles G. Hendrix, PE
## Revision History

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<th>Date or Version Number</th>
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<th>Change Description</th>
<th>Comments</th>
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<td>9/30/2013</td>
<td>Harvey Scribner</td>
<td>Original</td>
<td>V 0</td>
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<td>10/8/2013</td>
<td>Dee Edmondson</td>
<td>Revision</td>
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<td>V2, Send to: MEAM, TSGT, BEPC, CNP PID, USACE-NWO, WAPA.</td>
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<td>Addendum</td>
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<td>Addendum, submittal open period date change</td>
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<tr>
<td>12/9/2014</td>
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<td>UFLS Plan Rev. 3.1, Appendix E, revised for Inventory Workbook database</td>
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<td>UFLS Plan Rev. 4.2, PRC-006-2, and include GO participation.</td>
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