



NORTHEAST POWER COORDINATING COUNCIL, INC.
1040 AVE OF THE AMERICAS, NEW YORK, NY 10018 TELEPHONE (212) 840-1070 FAX (212) 302-2782

December 7th, 2010

NPCC Full Member Committee;

Please find attached a draft revised NPCC Regional Reliability Directory #12 *Underfrequency Load Shedding Program Requirements* and a draft revised *NPCC UFLS Implementation Plan* which are now posted to receive your comments through the NPCC Process for Open Review.

Recently, the SS38 Working Group on Inter-Area Dynamic Analysis completed two study reports on behalf of the UFLS Regional Standard Drafting Team.

The results and recommendations of those reports and their impact on the NPCC Regional UFLS program have been approved and endorsed by the Task Force on System Studies (TFSS) and the Reliability Coordinating Committee (RCC).

Accordingly, those study results have now been incorporated within the attached revised draft of Directory #12 and redlined to highlight the SS-38 recommendations on program tolerances and generator applicability.

On a separate but related issue, the TFSS has also endorsed revisions to the existing RCC approved NPCC UFLS Implementation Plan which will provide additional direction to entities who are currently implementing the NPCC UFLS program changes but require more detailed implementation guidance.

The NPCC Open Process Review may be accessed through the following link:

<https://www.npcc.org/regStandards/opOther.aspx>

Each document may be viewed and downloaded under the 'document' link and comments can be posted clicking on the 'add' link and following the prompts provided.

Comments on the proposed revisions to Directory#12 and the UFLS Implementation Plan will be received for forty five days through Jan. 21, 2011 and all comments will be addressed by the TFSS.

Please contact me with any questions regarding Directory content or document review.

Thank you.

Gerry Dunbar

Northeast Power Coordinating Council, Inc.

212.840.1070 (p)

212.302.2782 (f)

gdunbar@npcc.org

Implementation Plans

UFLS Implementation Plan for the Eastern Interconnection Portion of NPCC

END OF YEAR	CONVERSIONS/MODIFICATIONS	ORIGINAL REMAINING	TOTAL	REMARKS
0			10% - 59.3 Hz 15% - 58.8 Hz	
1	7% of the 10% block to 59.5 Hz	3% - 59.3 Hz 15% - 58.8 Hz	7% - 59.5 Hz 3% - 59.3 Hz 15% - 58.8 Hz	Setting changes only. Total clearing time of 300 ms can be implemented if possible
2	<ul style="list-style-type: none"> 4% of the 15% block to 59.3 Hz 3% of the 15% block to 59.1 Hz 	3% - 59.3 Hz 8% - 58.8 Hz	7% - 59.5 Hz 7% - 59.3 Hz 3% - 59.1 Hz 8% - 58.8 Hz	Setting changes only. Leave original 3% at 59.3 Hz. Total clearing time of 0.3 seconds can be implemented if possible
3	<ul style="list-style-type: none"> 4% of the 15% block to 59.1 Hz 3% of the 15% block to 58.9 Hz Add UFLS capacity of 2% at 58.9 Hz with total time delay of 0.3 sec. 	3% - 59.3 Hz 1% - 58.8 Hz	7% - 59.5 Hz 7% - 59.3 Hz 7% - 59.1 Hz 3% - 58.9 Hz 2% - 58.9 Hz (fast) 1% - 58.8 Hz	1 st year of adding 2% portion of the new UFLS capacity. New capacity will have total clearing time of 300 ms. 1 st year of decreasing total time if not already done so. Clearing time changes must be implemented if not done already in year 1 and 2
4	<ul style="list-style-type: none"> 1% of the 15% block to 58.9 Hz Change time of 1st block (59.5 Hz) to total of 0.3 sec. Add UFLS capacity of 1% at 58.9 Hz with total time delay of 0.3 sec Add UFLS capacity of 2% Anti-stall block at 59.5 Hz with total time delay of 10 sec 		7% - 59.5 Hz (fast) 7% - 59.3 Hz 7% - 59.1 Hz 3% - 58.9 Hz 4% - 58.9 Hz (fast) 2% - 59.5 Hz (10 s)	Adding anti-stall block.
5	<ul style="list-style-type: none"> Change time of 2nd block (59.3 Hz) to total of 0.3 sec. 		7% - 59.5 Hz (fast) 7% - 59.3 Hz (fast) 7% - 59.1 Hz 3% - 58.9 Hz 4% - 58.9 Hz (fast) 2% - 59.5 Hz (10 s)	Continue with time delay changes
6	<ul style="list-style-type: none"> Change time of 3rd block (59.1Hz) to total of 0.3 sec. Change time of remaining 4th block (58.9 Hz) to total of 0.3 sec 		7% - 59.5 Hz (fast) 7% - 59.3 Hz (fast) 7% - 59.1 Hz (fast) 7% - 58.9 Hz (fast) 2% - 59.5 Hz (10 s)	Program complete.

1. All percentages are approximate.
2. Conversions and modifications are to be dispersed geographically throughout an Area, as much as practical.
3. All conversions include the modifications necessary to achieve a total clearing time (UFLS relay operating time, aux relay time, and breaker time) of 300 ms. The 300 ms total clearing time can be taken as an average value. The regional standard could be written to require an average total clearing time plus or minus some standard deviation, such as 50 ms.
4. A minimum UFLS relay operating time shall not be less than 100 ms.

5. Final percentages of recommended program will be the end of year 6.
6. Transmission Owners and Distribution Providers with a peak load of ≤ 100 MW and who were initially granted a deferment from this implementation plan by their Balancing Authority shall implement the changes as prescribed in Sections 5.2.2 and 5.2.3 of Directory #12 within 36 months of the date that Directory #12 is revised to include these sections.

7. Following any two year period in which an entity's net end-use peak load is observed to have an average value above or below the defined thresholds (25 MW, 50 MW, and 100 MW) the entity shall inform their Balancing Authority and NPCC in accordance with the following, as applicable:

- a. The entity shall seek an exemption from UFLS in writing and, upon approval by the Balancing Authority and NPCC of that exemption request, the entity shall disarm its UFLS relays and report the completion of that action to the Balancing Authority and NPCC (Case #1. Decreasing Two Year Average to a value < 25 MW).
- b. Within thirty (30) days of the entity identifying a change in status, the entity shall file an implementation plan with the Balancing Authority and NPCC for approval detailing its schedule to achieve full compliance within a timeframe not to exceed twenty four months from that date of identification . (Case #2. Increasing Two Year Average to a value > 25 MW).
- c. Within thirty (30) days of the entity identifying a change in status, the entity may continue to provide the previous two stages of UFLS and remain fully compliant with those requirements or the entity shall file an implementation plan with the Balancing Authority and NPCC for approval detailing its schedule to reduce its two stage UFLS Program to a single stage UFLS Program while remaining in full compliance with the two stage program until that implementation plan is completed. (Case #3. Decreasing Two Year Average to a value < 50 MW).
- d. Within thirty (30) days of the entity identifying a change in status, the entity shall file an implementation plan with the Balancing Authority and NPCC for approval detailing its schedule to achieve full compliance within a timeframe not to exceed twelve months from that date of identification. (Case #4. Increasing Two Year Average to a value > 50 MW).
- e. Within thirty (30) days of the entity identifying a change in status, the entity may continue to provide the previous five stages of UFLS and remain fully compliant with those requirements or the entity shall file an implementation plan with the Balancing Authority and NPCC for approval detailing its schedule to reduce its five stage UFLS Program to a two stage UFLS Program while remaining in full compliance with the five stage program until that implementation plan is completed. (Case #5. Decreasing Two Year Average to a value < 100 MW).
- f. Within thirty (30) days of the entity identifying a change in status, the entity shall file an implementation plan with the Balancing Authority and NPCC for approval detailing its schedule to achieve full compliance within a timeframe not to exceed thirty six months from that date of identification. (Case #6. Increasing Two Year Average to a value > 100 MW).

UFLS Implementation Plan for the Québec Interconnection Portion of NPCC

1. Revision to existing relay settings is expected to be completed by the end of year 2.
2. Relay addition to complete the recommended program stages will be finalized by the end of year 3.