NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Meeting Notes

Project 2010-13.2 Phase 2 of Relay Loadability: Generation Standard Drafting Team

July 29-August 1, 2013

In-person meeting with ReadyTalk Web Access
Luminant Energy
Dallas, Texas

Administrative

1. **Introductions**

   The meeting was brought to order by Charles Rogers, chair, at 1:10 p.m. CT, Monday, July 29, 2013. Mr. Rogers thanked Mr. Youngblood, a retiree of Luminant for arranging the meeting for the team. Also, he noted that the standard was passed by the industry during the second successive ballot. Those in attendance were:

Name	Company	Member/ Observer	In-person (IP) or Conference Call/Web (W)			
			7/29	7/30	7/31	8/1
Charles Rogers (Chair)	Consumers Electric	Member	IP	IP	IP	IP
S. Bryan Burch, P.E.	Southern Company	Member	W	W	W	W
Steven Hataway	Florida Power and Light Company	Member	W	W	W	W
Jonathan Hayes	Southwest Power Pool	Member	IP	IP	IP	-
Mike Jensen	Pacific Gas and Electric Company	Member	IP	IP	IP	IP
Joe T. Uchiyama	U.S. Bureau of Reclamation	Member	IP	IP	IP	IP
Benson Vuong	Salt River Project	Member	IP	IP	IP	IP
David Youngblood	Luminant	Member	IP	IP	IP	IP

Name	Company	Member/ Observer	In-person (IP) or Conference Call/Web (W)			
			7/29	7/30	7/31	8/1
Syed Ahmad	Federal Energy Regulatory Commission	Observer	W	W	W	W
Scott Barfield-McGinnis (Standard Developer)	North American Electric Reliability Corporation	Observer	IP	IP	IP	IP
Phil Tatro (Technical Advisor)	North American Electric Reliability Corporation	Observer	W	-	-	W
Rob Delsman	Entergy	Observer	-	W	W	-
Gary Kruempel	MidAmerican Energy	Observer	-	W		
Michael McSpadden	Southern California Edison	Observer	W	W	W	W
Kelly Simmons	Xcel Energy	Observer	IP	IP	IP	IP

2. **Determination of Quorum**

   The rule for NERC Standard Drafting Team (SDT or team) states that a quorum requires two-thirds of the voting members of the SDT. Quorum was achieved on the first three days as eight of the ten members were present. On day four, quorum was achieved as seven of the ten members were present.

3. **NERC Antitrust Compliance Guidelines and Public Announcement**

   NERC Antitrust Compliance Guidelines and public disclaimer were reviewed by Mr. Barfield. There were no questions. Mr. Barfield also referred everyone to the two new NERC policies and demonstrated where to find them on the NERC website. The policies are related to use of the email listserv and standard drafting team meeting conduct. Each subsequent day of the meeting Mr. Rogers reminded in-person attendees and audio participants that the NERC Antitrust Compliance Guidelines, public disclaimer, and policies remain in effect.

4. **Review Roster**

   Mr. Barfield noted that there are no changes to the roster.

5. **Review meeting agenda and objectives**

   Mr. Rogers reviewed the agenda and objectives noting that the team's objectives are to get the standard (PRC-023-3) to recirculation by not make substantive changes.

Agenda

1. **Review of meeting notes (Reviewed)**

   The team reviewed the meeting notes from April 5, April 12, April 23, May 6, May 23, June 6, and June 10. Those requiring modifications were editorial in nature. Meeting notes are ready for posting to the project page.

2. **Open business from last meeting (Reviewed)**

   a. None.

3. **Respond to industry stakeholder comments (PRC-025-1)**

   The drafting began with reviewing the consideration of comments and during discussion of stakeholder comments developed four chief issues that could result in an undesired substantive change to the draft PRC-023-3 standard. The following concerns are outlined below:

   1. **Distributed generation collector systems:** To frame the concern, a comment revealed that the current draft standard has five applicability items where only the first four have an obvious correlation to the applications identified in PRC-025-1, Attachment 1, Table 1. The following five Applicability items are listed below for reference. Item 3.2.5 is the item in question that does not have a direct application in Table 1.

      3.2.1 Generating unit(s).

      3.2.2 Generator step-up (i.e., GSU) transformer(s).

      3.2.3 Unit auxiliary transformer(s) (UAT) that supply overall auxiliary power necessary to keep generating unit(s) online.

      3.2.4 Elements that connect a GSU transformer to the Transmission system that are used exclusively to export energy directly from a BES generating unit or generating plant.

      3.2.5 Elements utilized in the aggregation of dispersed power producing resources.

      Although one commenter noted that Attachment 1, Table 1 only addresses 3.2.1 through 3.2.4, this had merit and produced much discussion. The drafting team considered what relay applications would apply to Applicability item 3.2.5. It was clear to the team that this scenario was addressed by the references in the Figures which note how to apply Applicability item 3.2.5; however, the drafting team could see how

the stakeholder missed the connection. The drafting team agreed that in hindsight that based on the first four Applicability items having a correlation with Table 1 that Applicability item 3.2.5 is not explicit and is inconsistent with the approach used for the first four Applicability items.

In the discussion of approaches on how to resolve the issue with the most obvious being adding corresponding applications in Table 1 to address Applicability item 3.2.5, the drafting team realized that Applicability item 3.2.5 narrowly addresses what is generally thought of as dispersed generation (i.e., asynchronous), but not synchronous generation. One suggestion was to have the Applicability item 3.2.5 read - Elements utilized in the aggregation of generation resources (e.g., wind farm collector buses and hydro buses) which would address the narrow aspect of dispersed generation. The team agreed that this would most likely be considered a substantive change. To achieve clarity that dispersed generation includes both asynchronous and synchronous the team looked for a second approach.

The second approach which resulted in a non-substantive revision to the draft PRC-025-1 standard addressed the dispersed generation concern by adding clarifying language in the Application column of Table 1 for each of the associated relay types. This resolved the comment about the relationship between the Applicability section and Table 1, and the asynchronous and synchronous generation concern.

2. **Blackstart:** This issue concerned the draft PRC-025-1 standard's Applicability which says "…including those generating units and generating plants identified as Blackstart Resources in the Transmission Operator's system restoration plan." A few stakeholders suggested that the applicability of PRC-025 should exclude small gensets that are NERC-registered solely due to being black start-capable, that the tripping of these gensets would not meaningfully affect the ability of the system to ride through disturbances. It would be best to allow such units to maintain their present loadability relay settings, if they are consistent with a reasonable coordination study, rather than mandate upgrades. The drafting team recognized that there were comments during previous periods noting the cost versus benefit to reliability with the inclusion of small Blackstart units.

   The drafting team discussed the issue with regard to the current approved BES definition (eff. 7/1/2014), which includes Blackstart resources. The drafting team understood that the inclusion of small gensets does impact the cost to small owners of Blackstart units that might not be instrumental during the dynamic conditions under normal operating conditions. Additionally, these small genset units would probably be

more effective to reliability during restart where they must meet the conditions of EOP-005.

The drafting team further considered thoughts that small Blackstart units (i.e., small gensets) would be coming back on-line when voltage is zero and not during a depressed voltage or when any transient event anticipated by the standard would be occurring. Under EOP-005, these units are required to meet the performance requirements to restart the system. In many cases during Blackstart restoration of the system, Transmission protection relaying is disabled either to perform restoration or by inadequate fault current levels to operate the protection.

After discussion, the drafting team concluded that small genset units in their combined ability could play a significant role in providing Reactive Power during events (i.e., depressed voltage) anticipated by the standard as well as remaining on-line to provide Real Power output thereby not exacerbating the event. No change was made to the standard.

3. **UAT relays:** Stakeholders were concerned about the relays that are applicable to the draft PRC-025-1 standard. Previously, relays on the UAT specified that "relays that directly trip the generator" were applicable. During the last posting, the drafting team changed this language to specify "relays that consequently trip the generator." Commenters noted ambiguity with "consequential" and that removing the "directly" language made it inconsistent with the PRC-005 standard. Commenters were concerned with the change, a possible increase in compliance ambiguity on how to an entity would identify the relays that are applicable, and how auditors will approach audits in determining whether or not the entity properly complied with the "consequential" language.

   When the team changed the applicability for the last posting, it underwent several drafting team votes to achieve consensus because of the PRC-005 standard issue and because the drafting team moved the Applicability of these load-responsive protective relays to the high-side of the UAT, and in doing that the perception would be a perceived gap in reliability. The drafting team further discussed to a lesser degree, that there is little empirical evidence that these relays ever negatively affected reliability. It has been inferred these relays could have been lumped into the "unknown" relay operations of the August 14, 2003 Blackout which resulted in a FERC directive from Order 693.

The drafting team considered the use the language "operation of the relays will cause the associated generator to trip" (on high-side) to align with the PRC-005 standard and to be more explicit concerning the relays that are applicable to the PRC-025-1 standard. It was believed that this would eliminate confusion about which relays that may or may not "consequently trip the generator." A second approach that was considered was to return to the original language; although, that is more specific and clearer – the drafting team agreed it narrows the scope of the relays even more since they are only addressed when applied on the high-side of the UAT and that was a concern revealed in previous postings. The drafting team agreed to remove "consequential" from the Guidelines and Technical Basis, but leave the applicability and application of the UAT relays as proposed.

4. **Multiple lines from a generating plant:** A stakeholder raised this issue again as found in each of the previous comment periods. The drafting team initially decided that this issue has significant obstacles to determining a practical approach to solving in the timeframe needed to complete the draft PRC-025-1 standard. The drafting team agreed that it is not practical to use the full "aggregate generation capability" in the calculation of the relay setting and then apply that significantly larger value to each line in a parallel or multiple line interconnections. For example, a single line may not be capable of carrying the total aggregate generation and may lead to complication in protecting generation units. This configuration is common and typical where generation is co-located with commercial load (e.g., mining operations). One suggestion was to consider approaches used in PRC-023 or base the loadability settings on a ratio of the aggregate generation and the line capability; however, after considerable discussion, the drafting team determined that the best approach for this situation is to handle it similar to multi-winding transformers as currently addressed in the proposed PRC-025-1 standard. The result was a non-substantive clarification in the PRC-025-1, Attachment 1 discussion to clarify to stakeholders a practical approach to handling a parallel or multiple line interconnections.

4. **Review of the schedule**

   The team did not review the schedule.

5. **Action items or assignments**

   a. Mr. Barfield:

      i. Poll members for a conference call meeting middle August to address comments following the conclusion of the PRC-023-3 standard currently in its 45-day formal comment period and initial ballot in the last ten days of the comment period.

b. Mr. Jensen and Mr. Vuong

   i. Recheck calculations based on comments.

6. **Next steps**

   a. Respond to quality review at the middle August conference call, if needed.

   b. Post the PRC-025-1 standard for a recirculation ballot.

   c. Respond to comments from the PRC-023-3 standard for an initial ballot period.

7. **Future meeting(s)**

   Middle August conference call.

8. **Adjourn**

   The meeting adjourned at 11:02 a.m. CT on Thursday, August 1, 2013.