## Action Items from PDCWG Meeting 06-14-2017

1. Send the draft NPRR filed by Bob Helton on Resource Limits in Providing Responsive Reserves Service

Sent to the PDCWG exploder on June 19, 2017.

1. Point out that Resources providing FFR can only provide one AS at a time

In NPRR 828, sub-bullet (4) in Section 8.1.1.3.2 contains the verbiage that mandates in Real Time that Resources that provide FFR are providing only RRS and not using that capacity to provide any other service. This language is very similar to the one established for Hydro units that operate in synchronous condenser mode and provide RRS.

8.1.1.3.2 Responsive Reserve Service Capacity Monitoring Criteria

(4) A Resource providing FFR that is capable of providing Responsive Reserve and that has a status code of ONFFRL is considered to be providing responsive capability to the extent that it is not using that capacity to provide energy.

1. Language that governs when FFR is allowed to charge

In the Draft comment document, we have proposed adding language that clarifies system conditions under which Resources providing FFR will be allowed to withdraw energy from the grid following a deployment in Section 8.1.1.4.2 (2). Below is the proposed language.

* Sub-bullet (e) in Section 8.1.1.4.2 (2)(iii) on page 39

(e) Following recall instruction or completion of 15 minute deployment period, Resources providing FFR may not withdraw energy from the grid till frequency recovers to 60 Hz.

* Sub-bullet (d) in Section 8.1.1.4.2 (2)(iv) on page 40

(d) Following recall instruction or completion of 15 minute deployment period, Resources providing FFR may only withdraw energy from the grid after an EEA has ended and frequency has recovered above 59.95 Hz.

1. Primary and back-up frequency sources

We have reviewed the current Protocol and Guides and notice that no such guidance has been explicitly established for the equipment that currently sense frequency & respond to events. We think that this approach is acceptable for FFR as well. Reason being, should a FFR response failure occur due to issues related to frequency sensing, sub-bullet (11) in Section 8.1.1.1 in NPPR 828 includes provisions to disqualify the resource and require a Corrective Action Plan that addresses the deficiencies which may include adding multiple sources for frequency.

1. 8.1.1.2.1.2 language about breaker action

In NPRR 828, sub-bullet (8)(e)(1) in Section 8.1.1.3.2 contains the verbiage that clarifies that for resources providing FFR that rely on high-set under frequency relay for automatic interruption, the 30 cycle response time includes all relay and breaker operating time. This requirement is very similar to the requirement currently imposed on Load Resources that provide RRS.

8.1.1.2.1.2 Responsive Reserve Service Qualification

(i) The under-frequency relay or similar trigger mechanism must have a delay of no more than 20 cycles (or 0.33 seconds for relays that do not count cycles). The total time from the time frequency first decays to a value low enough to initiate action up to the time when full Ancillary Service Resource Responsibility for RRS is delivered should be no more than 30 cycles, including all relay and breaker operating times;

1. FFR response at 30 cycles or better

We have explored the option of using a delay that is lower than 30 cycles. A setting lower than 30 cycles reduces the delay period for response and may increase the risk of false positive pick up & response (“faulty” trips). Hence we recommend using 30 cycles as response time. That said, we are open to revisiting this setting in the future, should evolution in technology lower the risk for false positive trips.

1. How do we continue to make sure that Battery can provide performance consistent with the qualification?

Section 8.5.2 in Protocols (reproduced below) requires ERCOT/PDCWG to review the performance of Resources providing FFR for every FME. This is an appropriate venue for monitoring compliance of performance of Resources providing FFR.

8.5.2 Primary Frequency Response Measurements

(1) ERCOT, with the assistance of the appropriate Technical Advisory Committee (TAC) subcommittee, shall analyze the performance of All-Inclusive Generation Resources and Controllable Load Resources for all Frequency Measurable Events (FMEs) in accordance with the Operating Guides. In support of this analysis, ERCOT shall post the following: