**Items**

**91 Could fast frequency response play a bigger role?**

The FFR, Fast Frequency Response Ancillary Service product is designed for an eligible Resource provider to discharge in response to frequency trigger of 59.85Hz and the eligible Resource must be capable of providing its FFR responsibility amount for fifteen minutes and then charge for fifteen minutes upon recall of the FFR deployment(twice within the one hour award period). ESRs not providing FFR must provide Primary Frequency Response (PFR) at all times. If any ESR were awarded FFR, during the February Winter Event it would not have been able to charge because of the extensive amount of Generation Forced Outages and the Load Reductions eliminated any available energy for charging. However, due to the numerous unit trips, a fast frequency response product could have been utilized to prevent additional frequency decay except for one important asterisk. Fast frequency response products are designed to bolster frequency when the grid has low inertia, not provide sustained generation for a long period of time.

When FFR was approved as an AS product it was assumed the ESR’s would operate in what came to be called a Single Model. Current ERCOT System limitations have forced ESR’s to make offers as a generator and discharge as a separate CLR in what is referred to as the Combination Model. At the same time FFR was approved by the ERCOT BOD, ECRS, ERCOT Contingency Reserve Service was also approved to allow dispatched RRS products to replenish. ECRS must be supplied within ten minutes after being instructed to do so. As of the last most recent TAC meeting report, ECRS will not be implemented until six months after the EMS upgrades are completed. Ten-minute Non Spin can be used to fulfill the ECRS function in the meantime.

Fast Frequency Response (FFR)

The automatic self-deployment and provision by a Resource of their obligated response within 15 cycles after frequency meets or drops below a preset threshold, or a deployment in response to an ERCOT Verbal Dispatch Instruction (VDI) within 10 minutes. Resources capable of automatically self-deploying and providing their full Ancillary Service Resource Responsibility within 15 cycles after frequency meets or drops below a preset threshold and sustaining that full response for at least 15 minutes may provide Responsive Reserve (RRS).

3.18 Resource Limits in Providing Ancillary Service (3) (d)

The amount of RRS provided from a Resource capable of providing Fast Frequency Response (FFR) must be less than or equal to its 15-minute rated capacity. The initiation setting of the automatic self-deployment of the Resource providing RRS as FFR must be no lower than 59.85 Hz. A Resource providing RRS as FFR that is deployed shall not recall its capacity until system frequency is greater than 59.98 Hz. Once deployed, a Resource telemetering a Resource Status of ONFFRRRS or ONFFRRRSL shall telemeter an RRS Ancillary Service Schedule of zero, and when recalled, such Resource shall telemeter an RRS Ancillary Service Schedule that shall be a non-zero value equal to its RRS Ancillary Service Responsibility. Once recalled, a Resource providing RRS as FFR must restore its full RRS Ancillary Service Resource Responsibility within 15 minutes after cessation of deployment or as otherwise directed by ERCOT.

The February storm was an issue of total sustained generation not being able to meet the load requirements. To that point, **ANY** additional generation, generation provided AS, or load provided AS could have played a bigger role. However, FFR may have provided some temporary benefit even the relatively slow drop in frequency on 2/15/21 at around 01:45. As the FFR product is designed to arrest frequency during drastic drop of frequency and thus provide critical reliability support. However, A FFR product needs to be backed up by dispatchable generation. Without additional generation ramping up to meet the load demands, an FFR product only slightly delays the load shed required to balance the system.

The February storm was not an issue of the under procurement of single AS product but rather an inability of generation to meets the needs of load. While there may be other reasons to change the procurement of FFR, the February storm would not have benefited from a different procurement of the product.

**100. How did batteries providing FFR perform? Were FFR providers allowed to charge and if not, what penalties did they get charged?**

[**Winter Event 2021 PDCWG 05142021 v3**](http://www.ercot.com/content/wcm/key_documents_lists/220113/Winter_Event_2021_PDCWG_05142021_v3.pptx)

ERCOT has reported that ESR’s did not bid for FFR during the during the February Winter Event.

**10X** **ESR qualification for AS & duration impacts**

ESR qualifications for AS and corresponding duration or charge requirements were part of the 9 NPRRs that stakeholders developed in the [Battery Energy Storage Task Force](http://www.ercot.com/committee/bestf).