|  |  |  |  |
| --- | --- | --- | --- |
| NPRR Number | [1186](https://www.ercot.com/mktrules/issues/NPRR1186) | NPRR Title | Improvements Prior to the RTC+B Project for Better ESR State of Charge Awareness, Accounting, and Monitoring |
|  | |  | |
| Date | | September 19, 2023 | |
|  | |  | |
| Submitter’s Information | | | |
| Name | | Robert King | |
| E-mail Address | | [Rking@GoodCompanyAssociates.com](mailto:Rking@GoodCompanyAssociates.com) | |
| Company | | Spearmint Energy and Clean Capital Partners (“Joint Commenters”) | |
| Phone Number | | 512-773-6458 | |
| Cell Number | | 512-773-6458 | |
| Market Segment | | Not applicable | |

|  |
| --- |
| Comments |

**Spearmint Energy** is a preeminent green merchant trading company developing, owning, operating, and trading around battery energy storage, solar, and wind to reduce grid volatility, increase system resiliency, and help to reduce carbon emissions in a responsible and efficient way. We are in the process of energizing a 300 MWhr Energy Storage Resource (ESR) in ERCOT in 2023.

**Clean Capital Partners** is a firm specializing in the development and financing of utility-scale solar and battery energy storage projects with a deep concentration in the ERCOT market. Clean Capital commercialized a 113MW solar photovoltaic facility in ERCOT-Houston in summer 2022 and expects to achieve COD on a 349 MWhr ESR in Houston in summer 2024.

**Joint Commenters appreciate the improvements contained within Nodal Protocol Revision Request (NPRR) 1186,** particularly the change to decrease the State of Charge (SOC) during an Operating Hour in which the Resource is called to perform. However, the proposed revision request as currently contemplated still undermines the value of an ESR to both the owner and ERCOT.

**A flawed minimum SOC requirement unnecessarily strands available SOC creating potential reliability issues.** We appreciate that the Board of Directors of ERCOT has agreed with staff and stakeholders that NPRR1186 should be remanded for consideration of how to assure energy is not held back from the market when most needed. For an ESR qualifying to serve and having 2 hours SOC for ERCOT Contingency Reserve Service (ECRS) or 4 hours SOC for Non-Spinning Reserve (Non-Spin) at the top of any given hour, NPRR1186 would preclude discharging more than 1 hour’s energy. And, as noted by other parties previously, the ESR would then need to recharge to meet minimum SOC requirement at the top of the next hour. Even if ERCOT needs energy in that second hour, Load Frequency Control (LFC) can only send an Updated Base Point (UDBP) that stops the ESR from charging. ERCOT systems would still be unable to dispatch the stranded SOC. In an Energy Emergency Alert (EEA) condition, ERCOT may be shedding Load yet have potentially thousands of MWhs stranded in this way simply due to the flawed SOC requirement.

We would also make the point, however, that this stranded SOC has an adverse reliability and market price impact for consumers not just during EEA conditions, but frequently as the grid approaches scarcity, for example, during daily solar ramp-down. This is one of the strengths of ESR, and a significant part of our incentive to enter the market.

A simple solution is available. We agree with other long-duration storage providers that ERCOT has conflated duration, the capacity required to qualify to provide an ancillary service, with SOC in the current hour. To resolve the conflict ERCOT can set ECRS and Non-Spin compliance and Minimum SOC (MinSOC) curves in the same manner as it does for RRS and Reg-Up - from 1-hour SOC req at the top to the hour going to “0” at the end of the hour in a straight line. This simple change ensures that there is no stranded SOC due to the MinSOC requirement at any time. So, an ESR with 4-hour SOC providing NSRS can discharge continuously for 4 hours with this change without an artificially imposed need to charge within those 4 hours.

Even though it may seem that a 1-hour MinSOC requirement would be less reliable than a 4-hour MinSOC requirement, in practical implementation, exactly the opposite is true; i.e., a 1-hour MinSOC requirement provides for greater system reliability than an artificial 4-hour SOC requirement

Although it may seem counter-intuitive, this 1-hour SOC requirement is consistent with 2-hour and 4-hour sustained provision of ECRS and Non-Spin, respectively. NPRR1186 makes clear that an ESR can provide any Ancillary Service on a sustained basis so long as it is charging whenever the ESR does not have sufficient charge to meet the MinSOC requirement when discharging. Because any Controllable Load Resource (CLR), not just ESR-CLR, can qualify to provide Ancillary Service, ESRs can provide the Ancillary Service either as Generation Resource or CLR on a sustained basis as long as the ESR has at least 1-hour SOC capability. However, the 2-hour and 4-hour sustained provision requirement does set the maximum capacity that an ESR can qualify to provide for those Ancillary Services.

Thus, even though a 100MW-100MWh ESR can provide any Ancillary Service on a continuous basis by either discharging or charging, this ESR would not qualify to provide more than 25MW of NSRS and 50MW of ECRS. This implies a higher opportunity cost economic hurdle for the ESR to provide these services and thus maintains the strong market price signal of the value of 30-minute and 10-minute capacity. This Ancillary Service qualification hurdle alone is sufficient to strengthen the price signal for investment in such capacity and self-commitment of such capacity.

Additionally, Reliability Unit Commitment (RUC) is also being modified appropriately to take SOC into account to ensure reliability with adequate committed Resources to meet system needs. Having 4 times or 2 times as much ESR capacity as thermal capacity to provide the same amount of Non-Spin or ECRS adds conservativeness into the RUC process and is consistent with ERCOT’s conservative operation of the system.

**For Regulation Service, ERCOT should implement ESR Compliance SOC Requirements on a Qualified Scheduling Entity (QSE) ESR Portfolio basis**. Similar to the manner in which a QSE can use Participation Factors to specify the relative provision of energy from the QSE’s portfolio of ESRs providing Regulation Service (say Reg-Up), each QSE should have to comply with SOC requirements on a portfolio basis.

The need for this change is illustrated by the following example. Assume a QSE has two 100MW-100MWh ESRs with each having 100MWh SOC at top of the hour and no charging Base Point. The Locational Marginal Price (LMP) at ESR1 is $3,000/MWh and price at ESR2 is negative $30/MWh in a certain Security-Constrained Economic Dispatch (SCED) interval. The price signals point to the fact that energy at ESR1 location is more valuable and provides greater congestion management benefits than energy at ESR2 location. The optimal solution would be for ESR1 to have a Participation Factor of 1 and provide all the energy until it runs out and then ESR2 would provide the energy. However, proposed NPRR1186 would require that both ESR1 and ESR2 be simultaneously drained by one half. Otherwise, it would violate the individual MinSOC requirement for ESR1 even though as a portfolio, ESR1 and ESR2 combined have sufficient SOC to meet the combined MinSOC requirement. Since only SOC compliance at the QSE allows the optimal outcome from reliability and economic perspectives, the MinSOC requirement for Regulation Service should be implemented on a portfolio basis.

|  |
| --- |
| Revised Cover Page Language |

None

|  |
| --- |
| Revised Proposed Protocol Language |

None