

Ride Through Standby Solution

1 Background to Solution

Scottish Hydro Electric Power Distribution PLC (SHEPD) would like to make known its intention to seek expressions of interest from the market with regards to a potential requirement to procure services to deliver a Ride Through Standby Service for the 33kV distribution system on Shetland post any connection of the 33kV distribution system to a new 132kV transmission system supplied via a high capacity HVDC link between Shetland and the National Electricity Transmission System. The service will maintain an uninterrupted supply to all consumers and generators connected to the 33kV distribution system when the single circuit HVDC link or associated transmission network infrastructure suffers an unexpected forced outage.

It is a condition of the SHEPD operating licence that it provides consumers on Shetland with an enduring power supply. Therefore, it will be procuring any necessary equipment and services directly through bespoke arrangements.

SHEPD has undertaken preliminary dynamic modelling of the transients following an unexpected forced outage on the HVDC link and the 132kV connection to the HVDC link and it intends to put in place a Ride Through Standby Service comprising the following:

- A standby power station which is able to start within 30 minutes and deliver firm available power and energy for a continuous unlimited period as a standby in the event that the HVDC link suffers a prolonged forced outage. It is currently anticipated that the existing generating station will provide the standby power station service until the end of its economic life when it will be replaced. This is expected to be sufficiently far into the future that this element of the service is considered out of scope for the purposes of this opportunity.
- A 55MW (at least 25MWh) energy storage system connected to the 33kV distribution system which provides power and energy very rapidly following a disconnection of the HVDC link and for approximately 30 minutes whilst the standby power station starts up. Once the power station has started and the Shetland 33kV system is operated as an island the energy storage system will provide balancing and frequency management services.
- A 20MVA synchronous compensator augmented with a flywheel for additional inertia connected to the 33kV distribution system.

Detailed modelling will be completed and used to refine the Ride Through Standby Service following any contract award for the construction of the proposed HVDC link to Shetland.

2 Information Request Scope

2.1 Synchronous Compensator

The synchronous compensator will be owned and operated by SHEPD. Vendors of synchronous compensators should provide performance brochures and experience lists for similar equipment connected at high voltage.

2.2 Energy Service(s)

SHEPD is expecting to procure the energy storage system via a services type contract agreement commencing in 2025. Payments are envisaged to be a monthly availability payment for readiness services and utilisation payments for balancing and frequency

management services with a material incentive scheme such that payments would be significantly reduced for failure to deliver the service.

The services provider would be expected to be responsible for the performance of the energy storage system during the life of the contract. The energy storage system may be located on a single site or as a distributed resource to provide additional services to SHEPD at key points on the 33kV network. Provided it does not affect the provision of the contracted services SHEPD shall not prevent the service provider securing revenue for other services from the energy storage system subject to reasonable limits on any oversizing of the energy storage system. This could include installing the energy storage system prior to 2025 and providing an energy banking type service to address constraints and so increase the amount of electricity generated onto the 33kV distribution system by wind turbines.

If there was a clear cost advantage, SHEPD may consider procuring a energy storage system, at this point SHEPD is open to consider one or multiple suppliers for the solution.

2.3 Pre-Tender Meeting

SHEPD has scheduled a meeting by conference call for 27th February 2020 at which it will present to interested parties, a summary of the requirement and intended procurement approach. Interested parties are encouraged to register to attend this event and provide their feedback on the intended approach, with a view for the formal procurement process to kick off later in August 2020.

In order register for this call, please send a note of your interest together with the contact details (including email address) of those you wish to be invited to attend the call. This request should be sent to;

Timothy.higgins@sse.com

For any interested party that is/was unable to attend the webinar on the 27th February, all documentation including presentations and minutes of the call will be made available alongside this document.