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Topic A smart flexible energy system a call for evidence with data from Enstore -12

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Signed by *E A Lewis and P M Lewis* Company directors

Anacronyms

- EFR. Enhanced Frequency response.
- ESS. Energy storage system.
- Fast Fault current. The provision of AC current in to an AC fault for a defined time period.
- SBSPM. Second by second performance monitoring.
- SM1 & 2. Meters for recording the SBSPM.
- PM1 & 2. Meters for recording instantaneous and average AC grid power.
- PWM. Pulse Width Modulation
- VSM. Virtual Synchronous Machine implemented in a control system

The circuit shown on Figure 2.4 is the viable way to provide several Benefits in one system.

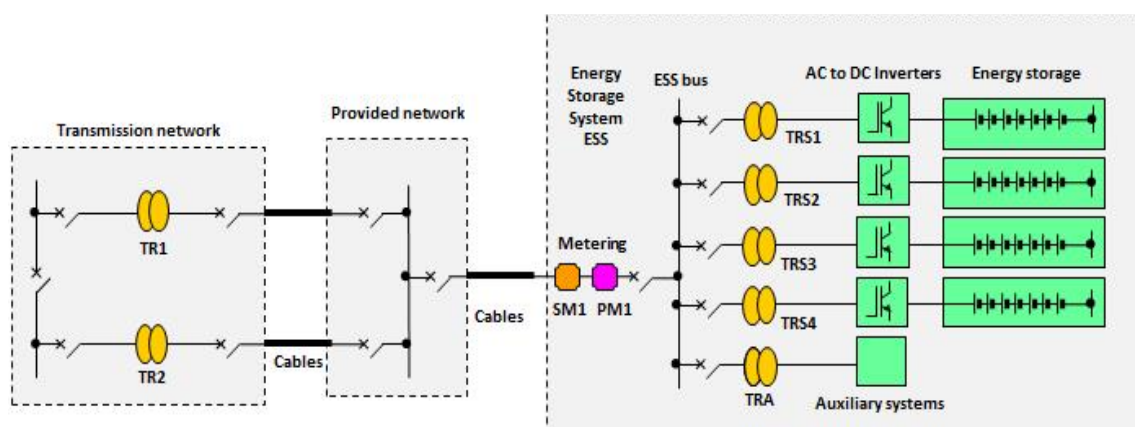


Figure 2.4.

The Figure 2.4 has the following features:

- One extra power converter, if needed, to supply the extra Benefits.
- Only one set of SM1 and PM1 metering.

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Issue 001 Page 1

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This is a viable concept and more importantly can be extended to provide the full set of Benefits.

Many studies have shown that having a system to facilitate supplying multiple Benefits from one battery will significantly lower costs and increase the installations of energy storage systems as shown on Figure 2.5.

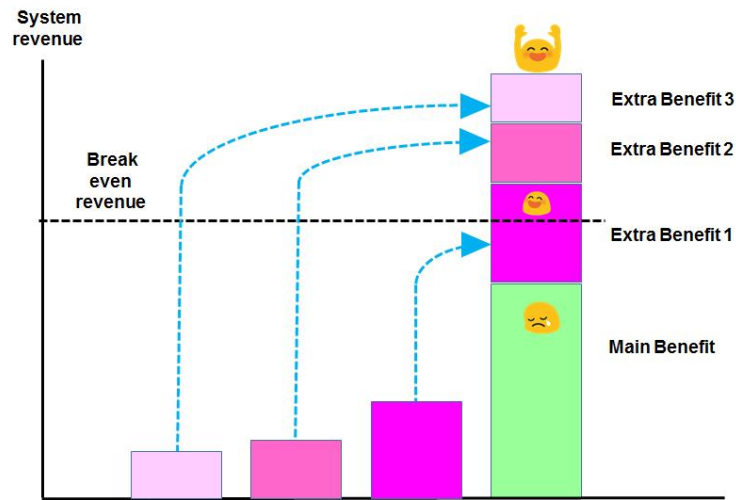


Figure 2.5.

The SPSPM concept used by the EFR project will need a major change to facilitate the adoption of the Figures 2.4 and 2.5 as the SM1 is seeing the net result of several **Benefits**.