Ofgem Consultation

Clarifying the regulatory framework for electricity storage: licencing

A Highview Power Storage response

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Highview Power Storage (HPS) welcomes the opportunity to respond to this consultation. HPS is an award winning, UK based energy technology company focused on a cleaner, more efficient and secure energy future. HPS has developed a proprietary energy storage technology that uses surplus electricity, at times of low demand/low cost, to make liquid air, which can be stored and released later to generate electricity at times of high demand/high cost.

HPS technology uses proven components from the industrial gas and power generation sectors, is unconstrained geographically, uses no exotic/rare materials and produces no harmful emissions. It has the potential to provide a large scale, long duration solution to the challenges to the electricity supply chain associated with increased intermittent low carbon generation and low carbon technology.

1. **Do you agree that the form and content of the licence as proposed in this consultation will achieve the purpose and deliver what we committed to in the Smart Systems and Flexibility Plan?**

Answer:

Including the definition of electricity storage in the electricity generation licence will assist in delivering the objectives set out in the Smart Systems and Flexibility Plan (SSFP). This will assist in providing more clarity around regulatory issues for most of energy storage use cases. However, as the role of storage as a source of grid flexibility increases, the proposed classification as a sub-category of generation is unlikely to provide enough clarity and certainty around storage operation.

We believe that in the medium term there is a need for storage to be defined as a separate asset class. Electricity Storage needs to be recognised as a third element in electricity legislation. Although it can function as demand and supply of energy, its main source of value is the ability to shift energy in space and time, delivering electrical energy previously generated where it's needed at the right time. By defining storage as a subcategory of generation its nature as demand might be neglected, resulting in uncertainty that can affect the business case and model of some units. For example, when referring to the exemptions for licencing based on the size of storage, intuitively the focus will be the size of the "generating" unit. However, the "demand" or charging unit can be used as a virtual power plant in a demand side management scheme or for the provision of synchronous inertia, depending on the technology type. The following question arises: Would a storage unit with a 60 MW charging unit and a 49.9 MW discharging unit be exempted from the licence? What would be its treatment in the planning consent process?

Another key difference between storage and conventional generation is the source of their primary energy. In the case of most conventional generation, it is a fuel that results in direct CO2 emissions. Fuel costs tend to be fixed over a relatively long period. In the case of storage, the primary energy is electricity with a broad range of possible sources and costs, including low carbon generation priced at negative values. These unique characteristics need to be addressed and valued to ensure a level playing field that allows fair competition, encouraging the deployment of this new technology.

2. **Do you have any views on whether we should include 'in a controllable manner' in the definition of electricity storage?**

Answer:

Highview supports the addition of 'in a controllable manner' to the definition of electricity storage. We hope that this will provide additional clarity on whether electricity storage should be classified as intermittent or non-intermittent power supply. This has consequences on the way network access charges and benefits are estimated.

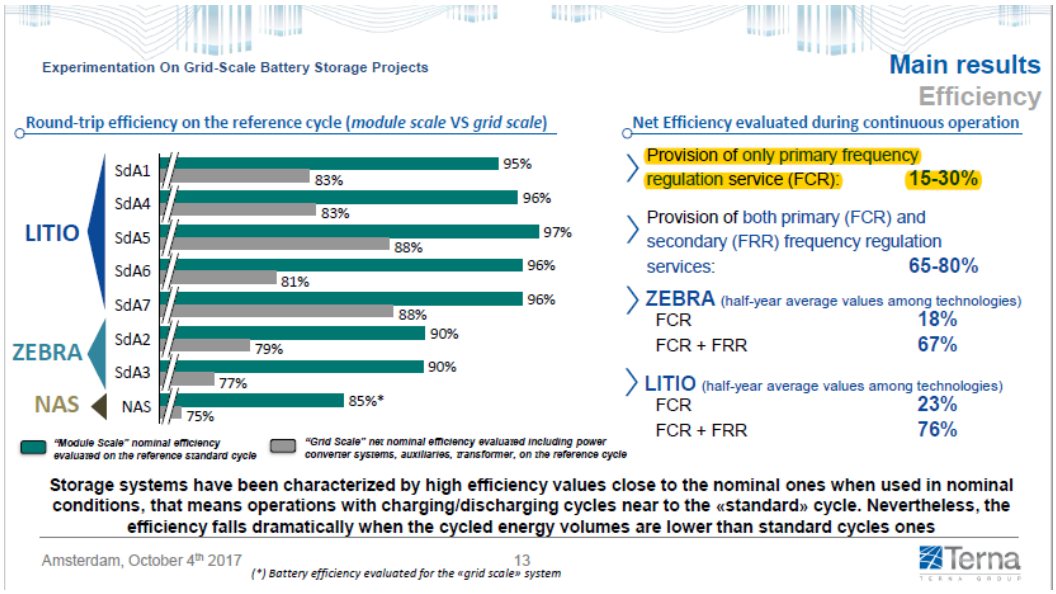
3. **Do you think there are any risks or unintended consequences that could arise as a result of our proposal? If so, please provide an explanation.**

Answer:

The definition of “primary function” and “primary purpose” needs to be carefully considered to avoid creating additional barriers for storage or to result in unintended consequences.

Out of the three proposed definitions of “primary function” enlisted in the consultation, the one based on type and criticality of services provided might be the most adequate.

This is because the definition of primary function based on the amount of electricity exported to the grid versus that consumed on site might penalise the use of storage for some grid applications. The figure below, presents results of storage efficiency for different technologies deployed by the Italian system operator in a testing facility. It is possible to see that when batteries are used for the provision of frequency response services exclusively, the associated efficiency (i.e. energy exported vs energy imported) can be as low as 15%. This shows that there are instances where comparing energy exported versus energy imported might not be a good indicator of whether the service provided is intended for self-consumption and could result in a systematic avoidance of end consumer charges.



Source:Terna

A similar problem might arise if the definition of primary function is based on the length of time a storage facility is deployed for injecting electricity back to the grid. In case of asymmetrical storage systems where the power rating of the charging unit is lower than that of the discharging unit (e.g. 1 MW charge, 20 MW discharge) The storage system will spend a greater amount of time charging than discharging, even if its main purpose is the provision of frequency control services.

4. **Do you have any comments on the list of technologies that should be included or excluded from the definition of storage as set out in Appendix A?**

Answer:

Highview supports the use of the list of technologies that should be included and excluded from the definition of storage as set out in Appendix A of the consultation document.