

The Irish Energy Storage Association welcomes the Security of Supply Consultation and the opportunity to respond.

We commend DECC on this comprehensive consultation document. We would like to make some comments and add some further information which we hope will be useful.

### **Electricity Supply Mitigation Options (Sect 7.2)**

#### Additional Electricity Storage

To provide additional electricity storage, you suggest 360MW of Pumped Hydro by 2030. This is very ambitious because of the significant civil works required and the associated planning permissions. Also the capital costs are very high compared to other storage technologies. However we agree that it could be a good strategic asset for Ireland because of its very long lifetime. Turlough Hill has been in operation since 1974 and should be able to operate for another couple of decades, having undergone a major refurbishment.

There is a new pumped hydro technology which uses a fluid with a density 2.5 times that of water. This has the advantage that, for the same output, it needs less height difference between the upper and lower reservoirs (or tanks). This allows more geographical flexibility and may facilitate a location nearer to large wind generation. It should also significantly reduce capital costs.

There are also a number of other energy storage technologies as well as batteries which should be considered such as Compressed Air Energy Storage (CAES) and Liquid Air Energy Storage (LAES). These would operate in a similar way to pumped hydro storage, storing the energy as compressed air or liquid air rather than water at a height.

There are also opportunities to store energy as heat for industrial processes. The electrification of such heat not only reduces emissions but it reduces the usage of gas (potentially helping security of gas supply) and it provides flexible electricity demand which can be turned down at times of shortage and turned up when there is excess wind/solar. This will contribute to security of supply.

#### Conversion of a gas fired power plant to hydrogen

It is not clear how the hydrogen is supplied to hydrogen fired CCGT plants by 2030. Is it expected that the main gas grid will be fully hydrogen by then or will there be separate hydrogen supplies available to such plants? The proposal is still valid in terms of at least some CCGT plant being able to run on natural gas or hydrogen or a mixture of both as the percentage of hydrogen in the grid gas supply increases.

### **Market Mechanisms**

We are pleased to see recognition of the importance of markets to support all the different types of plants required to provide security of supply. The current electricity market will not support longer

duration energy storage plants required to provide security of supply. This applies to batteries with durations longer than 2 hours and even more so to high capital cost energy storage technologies as discussed above. This needs to be addressed urgently.

One of the major constraints on building new generation, whether renewable or gas, is the grid infrastructure. Strategically located energy storage can help to remove grid congestion and allow such plants to be built. However there is no market mechanism to provide sufficient revenue to sustain such plants. Again, this needs to be addressed urgently.