Electricity: Short Term Balancing

This lever controls the sub-levers listed in the table, and ambition levels are for the end year shown on the right-hand side.

Interconnectors allow the UK to import and export electricity to and from Europe. In 2015 there were four major interconnectors between the UK, Ireland, The Netherlands and France totalling 4 GW of capacity. There are planned projects for expanding the amount of interconnection by 2025 in two phases. Window 1 projects would add 7.7GW of additional capacity, and window 2 projects would add a further 4.2GW. In addition, the Aquind project would add another 2GW. The MacKay Carbon Calculator uses interconnectors for short term balancing only. In reality, interconnectors can also be used to provide capacity, so reducing dependence on unabated gas in meeting peak demand.

Storage and demand shifting are provided by demand side response (DSR), vehicle-to-grid (V2G) and electricity storage (such as batteries or pumped storage like Dinorwig). DSR involves consumers of electricity increasing, reducing or shifting their consumption to react in real time to demands on the grid. This is already done by some industrial consumers. In the future, it may be possible for domestic appliances such as heat pumps to perform a similar function, as well as smart charging of electric vehicles (EVs) at times when electricity demand is high. V2G allows owners of EVs to provide battery capacity to the grid to help supply electricity during peak times.

Key Interaction

Short term storage will help balance supply and demand, reducing the generation capacity required to meet peaks. As back up capacity is often fuelled by unabated gas, this can reduce emissions. This is particularly important when using significant amounts of intermittent renewables.

Level 1

6.5 GW of interconnector capacity (including projects under construction) plus 5 GW of storage & demand shifting.

Level 2

9 GW of interconnector capacity (including completion of projects under construction and those in advanced development) plus 25 GW of storage & demand shifting.

Level 3

14.5 GW of interconnector capacity (including completion of projects under construction, projects in advanced developments and around half of remaining opportunity identified by National Grid) plus 50 GW of storage & demand shifting.

Level 4

20 GW of interconnector capacity (including completion of projects under construction, projects in advanced developments and all of remaining opportunities identified by National Grid) plus 100 GW of storage & demand shifting.

Default Timing

Start year: 2020, End year: 2050

Sub-Lever	Units	2015	Level 1	Level 2	Level 3	Level 4
Storage & demand shifting	GW	3.0	5.0	25.0	50.0	100.0
Interconnection	GW	4.1	6.5	9.0	14.5	20.0