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Helping the 2030 Target

Previous Updates have argued that Labour's target of 100% zero carbon electricity by 2030 won't be met. There are things it could do to get us closer than its current plans. To see exactly what they would be involves making some grand assumptions, summing the GWs available and deducting GWs needed.

The Great Grid Upgrade (Grand Assumption No 1)

NGC's "Great Grid Upgrade" is under way, from Hinkley Point (completion due in 2026), across East Anglia, (Norwich to Tilbury), Suffolk and Kent, connecting new offshore windfarms. There are 17 major network infrastructure projects under way or planned.

When will all that be done? There is nothing more specific from NGC than "over the next few years". Whilst that's not encouraging, I propose to assume that the wires needed for all big projects (offshore wind and nuclear) will be there when needed.

This leaves 'small' network wires. Network operators are still telling most developers of plant other than batteries that connection before ~2036 won't happen. No assumptions about these small networks are possible.

Offshore Wind Development (Grand Assumption No 2)

New offshore wind farms need a decent-paying CfD. An auction is being held now, with another next year and another the year after. Applicants must have completed all preparatory work and be able to start construction right away. Successful applicants from the current auction can start to generate by late 2028.

Only 10GW of offshore wind can be built at a time: there isn't sufficient skilled labour or construction equipment for more and there are supply chain issues.

The construction phase of an offshore wind farm is estimated at 2-4 years. Thus the 2024 and 2025 auctions mean that by 2030 we *might* have a further 20GW of offshore wind to add to the 15GW we already have. Let's assume we do.

Other Plant (Sum No 1)

Add to the estimated 2030 offshore wind figure of 35G the current 15GW of onshore wind and 16.9GW of solar. Add in nuclear plant (assume all plant stays open and new plant is added in - **Grand Assumption No 3**) that comes to ~5.3GW. The whole comes to ~75GW.

Interconnectors (Sum No 2)

There are currently 7 interconnectors with a combined capacity of 10GW. NGC claims that by 2030, 'its' interconnectors (2 are independent) will import 90% zero carbon electricity. Let's suppose it's 100% for all interconnectors.

The importance of interconnectors is supply during high-demand periods, periods overlapping between importing and exporting countries. For power to be imported, the GB price must be higher than at the supplying end. If regulation allows GB to keep its prices higher, we have a figure of ~85GW zero carbon electricity by 2030.

Peak Demand (the Deduction)

If the 2030 target is to be met, all these figures have to be greater than peak demand. That is currently 61.1GW. At ~85GW of low carbon electricity: isn't the target met?

No, it isn't. By 2030 the Climate Change Committee estimates a demand increase of 50% by 2030 (NGC estimates it at 65% by 2035). So we will need to be able to meet peak demand of ~92GW by 2030.

There is a 2030 6GW gap between peak demand and zero carbon power. That may seem to be relatively small, but it is based on the Grand Assumptions and is undoubtedly greater or much greater.

Closing the Gap

We need three things to help close the gap. (It is 'help' close the gap rather than actually doing so, because the Grand Assumptions are exactly that, grand.)

- We need more zero carbon power generation but without more network capacity or access *soon*, that generation won't aid the 2030 target.

- We need to use means now available to manage increased demand and avoid the need for more network infrastructure or generation: we need to use DSR at a vastly increased rate.
- We need to use (together) technologies to provide power backup and system stability to avoid the need for gas.

Demand Side Response In 2018 analysis showed that at least 5GW DSR could then be made available to the Capacity Market. At that time the government believed the CM would shrink and disappear as DSR increased.

With increased demand, the 2018 5GW of DSR should grow as demand for electricity grows. By 2030 it should be at least 7.5GW, without further DSR development and a great deal more with development.

What has happened? The CM is going strong and DSR formed just 2% of total volumes offered to it in 2022-2023, less than 1GW. DSR is going backwards.

This has to become a major policy issue for government. DSR should be achieving *at least* the same amount as any offshore windfarm in current auctions.

Storage and Stability Services

Technologies to stabilise the system are already in use and are developing and expanding. Storage technologies are also in use via short duration batteries (SDES) of between 1-4 hours.

There is a new generation of long duration batteries (LDES) of 4-12 hours made of sustainable materials. Some are in early development, some at an even earlier stage than that; some are in late stages of proving. These are of multiple size and duration.

Both short duration batteries and LDES can, in principle, be used for DSR, back-up, storage and arbitrage.

What is needed is LDES and, apart from pumped storage, none are in use. LDES, but not SDES, can be used to provide system balancing. This must be their most important role. It is *the* way networks can stop relying on gas power stations.

The government expects there to be 30-50GW of long duration technologies (not only batteries) by 2035, presumably with a large number by 2030. (It seems to think that hydrogen has a role to play, but recent research suggests otherwise.)

Although government concern is positive, its proposals to incentivise LDES is limited to technology that isn't proven or even properly developed. That means incentives will be put in place for technologies that will take years to become commercially viable. There are no incentives for LDES that is almost proved.

On this basis it is hard to see how there could be sufficient LDES in place by 2030. Rethinking is needed: if the 2030 target is to be reached, *all* LDES should be incentivised urgently. Without it, come 2030 we will still need gas plant.

There are two major incentives that could be introduced for LDES that is almost proved. In very brief form, they are the below.

First, the creation of a dedicated LDES 'space' in the CM with guaranteed volumes at prices that encourage investors in the new technology. The change could be made reasonably rapidly and could endure for just as long as it took to fully prove the technology and make it capable of being funded by the market on usual terms.

Second, there needs to be a change to the way networks are rewarded. Right now they earn money on their assets and have no overriding financial reason to avoid building new network infrastructure in place of using others' assets. Whilst they have innovation incentives, these don't begin to compete with asset-ownership incentives. The price controls mandating these arrangements end in 2028, just 2 years before sufficient LDES and other technologies need to be in place to help reach the 2030 target.

Without LDES gas power plant will still be running in 2030. Incentivisation of what is *now* available needs urgent policy review.

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