

Issues with Ever-Shortening Contract Durations



Since privatisation, the only major capital investment into infrastructure-scale plant and equipment that was not planned before privatisation has been undertaken under special financial instruments (ROCs, OFTOs, CATOs, CfDs, CM etc.) that guarantee 15+ year contracts. (The Capacity Market failed to incentivise substantial amounts of new construction as it accounts for under 10% of required asset revenues, it is therefore used as a revenue top-up.) Each such instrument has rules and is therefore a market distortion. Note that 15-20 years is half the planned operational life of such assets.

Moreover, taking such actions is distorting the market so much that less than half of the average industrial user's electricity bill is the cost of the energy; the rest is not just the cost of the grid lines, but also the fast-growing levies and charges required to keep the system operating reliably and stably. In a cost-effective and efficiently run system, energy costs should be the same proportion as a couple of decades ago: between five-sixths and three-quarters of the total bill.

A few years ago battery storage was accelerated by developing the EFR (Enhanced Frequency Response) instrument which gave a 4-year contract length – again, half the planned operational life of such assets.

While some short-duration contracts are beneficial for plants not requiring major capital expenditure, and such contracts help control prices for consumers, they are useless for plants requiring either construction or major refurbishment/upgrade: these need long- and medium-duration contracts respectively.

The results are easy to see, if only you look for them.

- ◆ Post privatisation, ministers trumpeted that this short term (mostly 2-year contracts) contracting market was delivering the continent's second cheapest electricity; now it's among the most expensive;
- ◆ At privatisation we were concerned to build interconnectors to export our surplus electricity; now we are obliged to import during times of system stress (high demand and/or low renewables generation) just to keep the lights on;

Grid-scale electricity storage using an innovative form of Compressed Air Energy Storage



- ◆ At privatisation the grid and infrastructure-scale plant on it needed major replacement / refurbishment programmes; since then the average age of such assets has grown by almost a year every year because such replacement / refurbishment is not being done;
- ◆ Due to the lack of investment, the grid's future is in doubt:
 - ◇ FES scenarios consistently rely on technologies that have not yet been developed to a point at which they can be delivered at either the scale/cost/duration (e.g. CCS, batteries, DSR, V2G) or on-time/to-budget (e.g. nuclear). See the [FES 2020 analysis summary](#) - the full analysis is available [here](#),
 - ◇ It relies on non-inertial systems to deliver the inertia required by the system, paying for curtailment and other substantial actions and costing a forecast (by National Grid) £1bn p.a. by the 2030s - see [The Lockdown – a Partial Test of the 2030s Grid](#) –also [Lessons for Europe from the August 2019 Blackouts](#),
 - ◇ It is looking into hugely expensive and unnecessary actions to provide Distributed Re-Start capability - see **Re-Starting Net Zero Grids**.

Unfortunately the entire thrust of changing regulations is going in the direction of ever-shortening contract notice times and durations. Examples of this are in the move to day-ahead single-day STOR contracts, the abandonment of Fast Response and the adoption of Dynamic Containment. While incumbent operators can adjust their trading, there is no commercial case for new entrants, or especially for new technologies. This in turn impedes the decarbonisation of the grid, contrary to the claims on [National Grid's website](#) relating to these changes.

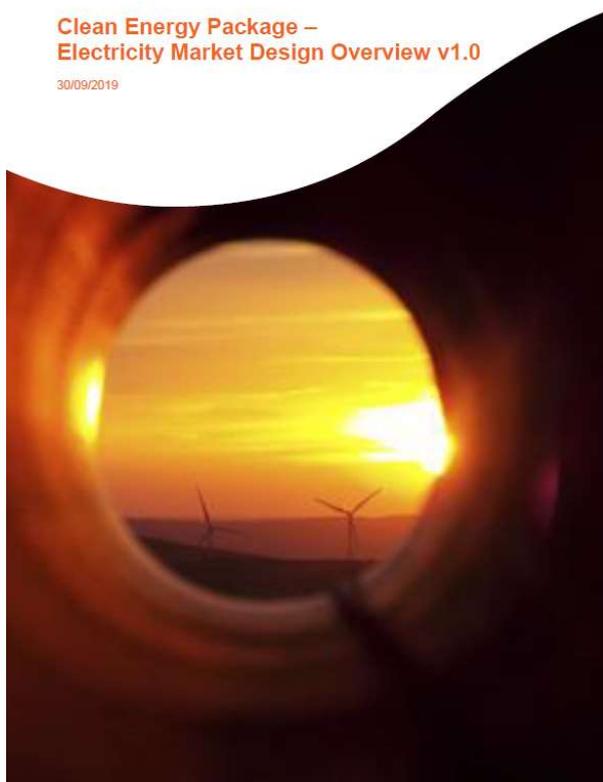
These are in response to the European Union's Clean Energy Package, adopted by European legislation in 2018-19. One of the few positives to arise from Brexit is our ability to turn away from such counter-productive legislation, so it is particularly puzzling why this government, regulator and grid operator are so hell-bent on implementing it.

There is a very simple, much better and vastly cheaper alternative way of regulating and contracting grid services. It can be implemented gradually, without big bang. And, by enabling us to diverge from European directives, its implementation may be one of the very few benefits that Britain can accrue from Brexit. Please see the proposal [A 21st Century Electricity System](#).

nationalgridESO

Clean Energy Package –
Electricity Market Design Overview v1.0

30/09/2019



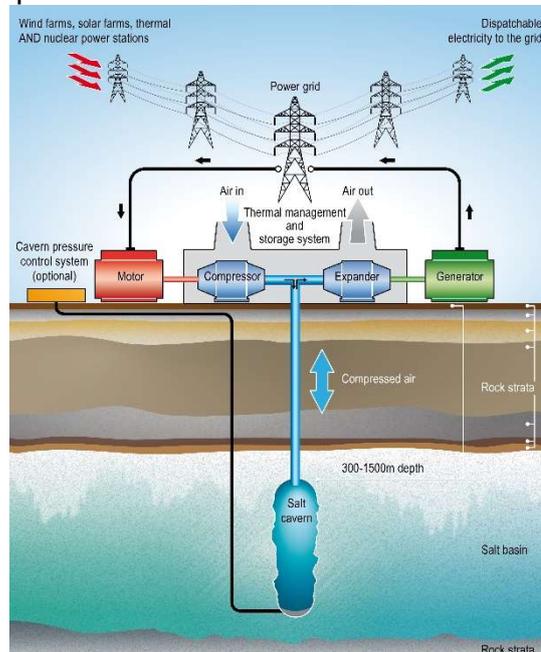
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About Storelectric

Storelectric (www.storelectric.com) is developing transmission and distribution grid-scale energy storage, all built with today's standard equipment.

- ◆ Innovative adiabatic Compressed Air Energy Storage (TES CAES). Our 500MW, multi-GWh installations will have zero/low emissions, operate at 68-70% round trip efficiency, levelised cost significantly below that of gas-fired peaking plants, and use existing, off-the-shelf equipment. It simplifies the Huntorf plant, operating since 1978. A hybrid will provide reserve grid power.
- ◆ Their CCGT CAES technology converts and gives new economic life to gas-fired power stations, halving emissions and adding storage revenues, thereby re-living stranded assets. It simplifies the McIntosh plant, operating since 1992. A hybrid is significantly more efficient.



Both technologies can offer black start and similar services. They will operate at scales of 20MW to multi-GW and durations from 4 hours to multi-day. With the potential to store the entire continent's energy requirements for over a week, potential globally is greater still. In the future, Storelectric will further develop these technologies, and other geologies for CAES, all of which will greatly improve storage cost, duration, efficiency and global potential. They address the entire energy trilemma: the world's most cost-effective and widely implementable large-scale energy storage technology, turning locally generated renewable energy into dispatchable electricity, thereby ...

enabling renewables to power grids cheaply, efficiently, reliably and resiliently.

About the Author

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A graduate in Physics with Electronics, he has 12 years' management and innovation consultancy experience worldwide. In a rail multinational, Mark transformed processes and developed 3 profitable and successful businesses: in commercialising a non-destructive technology he had innovated, in logistics (innovating services) and in equipment overhaul. In electronics manufacturing, he developed and introduced to the markets 5 product ranges and helped 2 businesses grow strategically.

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