

# 100% Renewable UK

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## **Small Modular Reactors – Fantasy nuclear power**

The Government is busy pushing 'small modular reactors' (smrs) as one of its key means of boosting jobs in the North. During the election the Government attempted to link a faltering and unlikely 'small modular reactor' (SMR) nuclear programme with target seats in the North. The (so-called) SMR programme seems highly unlikely on financial grounds alone as it would require a massive Government commitment, and on top of that engineering questions undermine the credibility of the programme.

The Government has now issued a press briefing naming Dominic Cummings as favouring the technology as being a means of boosting the North. Like many of Boris Johnson's schemes, this particular promotion has little grounding in reality but is designed to stoke populist fantasies about how the Government can cut through problems and achieve simple solutions.

The UK's SMR programme, such as it is, is neither modular or small or, for that matter, much in existence. The Government are backing plans by Rolls Royce, and have promised an initial £18million, but in reality even to build one prototype plant would require Government to commit to spending over a billion pounds. This is because even if the cost of the reactor were to turn out close to what Rolls Royce claim (£500 million) it would require an additional several hundred £million for the reactor design to go through the required 'General Design Assessment' (GDA) required of all new reactors (by the Office for Nuclear Regulation). As if this was not enough, I understand that Rolls Royce have demanded, as the price of going through a GDA, a Government commitment to effectively underwrite several reactors requiring a Government commitment to raise several £billions before there is any chance of any power ever being generated.

This financial background alone suggests that this SMR plan is a fantasy that is even less credible than Boris's plans for a Thames Estuary airport or even a bridge between Scotland and Ireland.

However, basic engineering questions also suggest that that the SMR plans will go nowhere very slowly. The idea of building what is, in historical terms, a medium sized nuclear power plant (440 MW), defies the logic of nuclear power development since WW2. This has involved building steadily bigger reactors in order to, apart from anything else 'calculate down' (in the words of Mycle Schneider) the costs of nuclear safety measures.

Smaller reactors may (or may not) reduce expensive delays in construction time, but they are counterbalanced by the lack of economies of scale. Indeed the size of the proposed Rolls Royce SMR is roughly the size of the UK's first grid connected 'Magnox' reactors. The number and scope of safety measures required for new reactors has increased dramatically since the 1950s (extra containment, redundancy in primary and secondary safety injection systems, back up diesel generator sets etc), so intuitively a smaller reactor does not seem the way to go.

Ordinary engineering rules suggest that costs will not be lower per kW. eg you still need to make the same number of many of the parts (eg reactor pressure vessel) even though the parts may be smaller; hence savings in cost do not reduce proportionately to size. Rolls Royce plans, whose own projections of cheap generating costs must be treated with a wagon-load of salt, are highly unlikely to go very far, apart from that is in terms of uselessly soaking up a few tens of millions of pound of Government funds.

We can expect a lot more of this bull and fantasy as time goes on. Yet eventually, like the other great objectives this Government has us believe are going to happen, (rescuing the NHS, delivering a post Brexit boom) people may realise that the rhetorical fantasy is just what it is, fantasy.

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