



# Financing low-carbon generation in the UK: The hybrid RAB model

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## Abstract

Decarbonising electricity is a critical first step in mitigating climate damage but low/zero-carbon generation is very capital intensive. Its cost depends critically on the weighted average cost of capital (WACC). Three factors combine to make a low WACC both desirable and feasible in the UK. First, the Stern Report argues for a low social discount rate (1.4% real) for investments in climate mitigation. Second, global and UK real interest rates have been falling steadily - UK gilt index-linked 20-year rates have fallen from +4% in 1995 to -2% (negative) in 2019. CCS and nuclear have long lifetimes over which to recover their capital cost, longer than commercial finance would accept without guarantees, in contrast to renewables where off-take contracts have proven sufficient. Nuclear power faces the additional investment challenge of lengthy uncertain construction. No nuclear plant has ever been built privately without substantial regulatory guarantees. The Regulated Asset Base (RAB) model can address these financing problems for long-lived low-carbon assets. The benefits of placing risk on developers to motivate cost control are small compared to the extra costs of a higher weighted average cost of capital (WACC). A hybrid RAB model (like that used for the Thames Tideway Tunnel)—with excess cost sharing and a cost cap—can reduce risk to deliver an adequately low WACC by accessing infrastructure funds that do not require extensive specialised project knowledge. If the risk of excess costs is spread over the 27 million households and other customers taking two-thirds of electricity, each would bear minimal risk and the cumulative cost would be significantly lower. The levelized cost at the WACC (3.5% real) is £53/MWh if on time and budget, which should be compared with a counterfactual in which all the risk is placed on the company requiring a contract-for-difference with a strike price of £96/MWh for the life of the project (equal to the levelized cost). The levelised cost to consumers if on time and budget would be £50/MWh and in the worst case with a 48% cost over-run, £64/MWh.

**Keywords** Nuclear power, financing, RAB, WACC, risk

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