
Regulated Asset Base Financing Mechanisms - Its Rational and Potential Application for New Nuclear

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Department for
Business, Energy
& Industrial Strategy



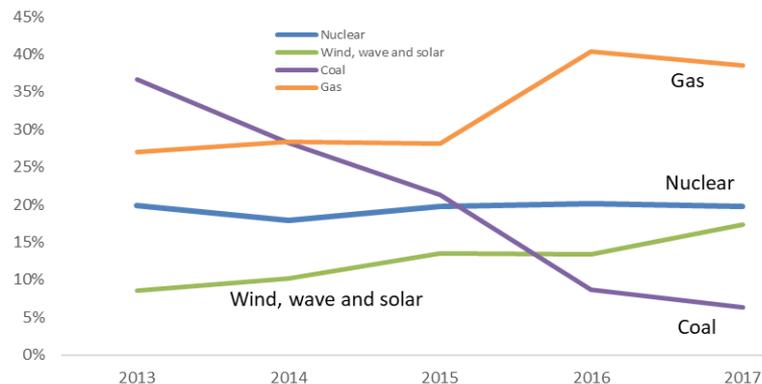
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The UK nuclear context

UK nuclear position

- The UK commissioned the world's first civil nuclear power station in 1957. Since then, nuclear power has provided a reliable source of low-carbon, reliable electricity for our economy.
- The UK has 8 power stations (15 reactors) generating about 20% of its electricity but 7 stations are due to retire by 2030.
- In 2008, UK Government welcomed proposals from developers for new nuclear power stations.
- Electricity Market Reform, including the CFD price support mechanism, introduced for low carbon generators in 2013.
- EDF started construction of Hinkley Point C in 2016, due for completion c.2025. Twin EPR units to deliver around 7% of total UK power supply.
- National Audit Office recommended UK Government consider alternative financing approaches.
- In July 2019, BEIS launched consultation on 'Regulated Asset Base' model for funding new nuclear

Share of electricity generation



Source: BEIS

Nuclear reactors operating in the UK

Plant	Type	Present capacity (MWe net)	First power	Expected shutdown
Dungeness B 1&2	AGR	2 x 520	1983 & 1985	2028
Hartlepool 1&2	AGR	595, 585	1983 & 1984	2024
Heysham I 1&2	AGR	580, 575	1983 & 1984	2024
Heysham II 1&2	AGR	2 x 610	1988	2030
Hinkley Point B 1&2	AGR	475, 470	1976	2023
Hunterston B 1&2	AGR	475, 485	1976 & 1977	2023
Torness 1&2	AGR	590, 595	1988 & 1989	2030
Sizewell B	PWR	1198	1995	2035
Total: 15 units		8883 MWe		

Source: BEIS

*Expected shutdown dates as per EDF's publicly stated estimates



Why is HMG considering a nuclear RAB?

Attract private sector capital

- HMG policy remains for private sector to finance new build nuclear power stations.
- However, it accepts that there is currently limited private sector appetite for certain nuclear risks, particularly full exposure to nuclear construction risk, and at a cost of capital that is likely to represent good value to consumers. This is borne out by recent experience of Horizon and NuGen projects
- By providing a predictable return to investors via a regulatory model that shares risk with the supply chain, consumers and, *in extremis*, taxpayers, a RAB model could attract private sector capital at an affordable cost

Allow equitable risk sharing

- A RAB model could potentially reduce the cost of private sector capital while mitigating consumers and taxpayer risk
- It does this by ensuring risk is fairly allocated between them and incentives are appropriately calibrated to deliver financeability while aligning the interests of investors and consumers
- Investors are incentivised to minimise costs whilst maintaining the asset, and the economic regulator acts in the interests of consumers to obtain fair pricing and ensure efficient asset delivery

Deliver affordable electricity generation

- Attracting capital at a lower cost has the potential to deliver nuclear with a reduced impact on consumer bills and a lower total electricity system cost
- This is because the size of the capex requirement and low marginal generation cost once operating means that capital costs are a very significant determinant of required generation prices for nuclear projects

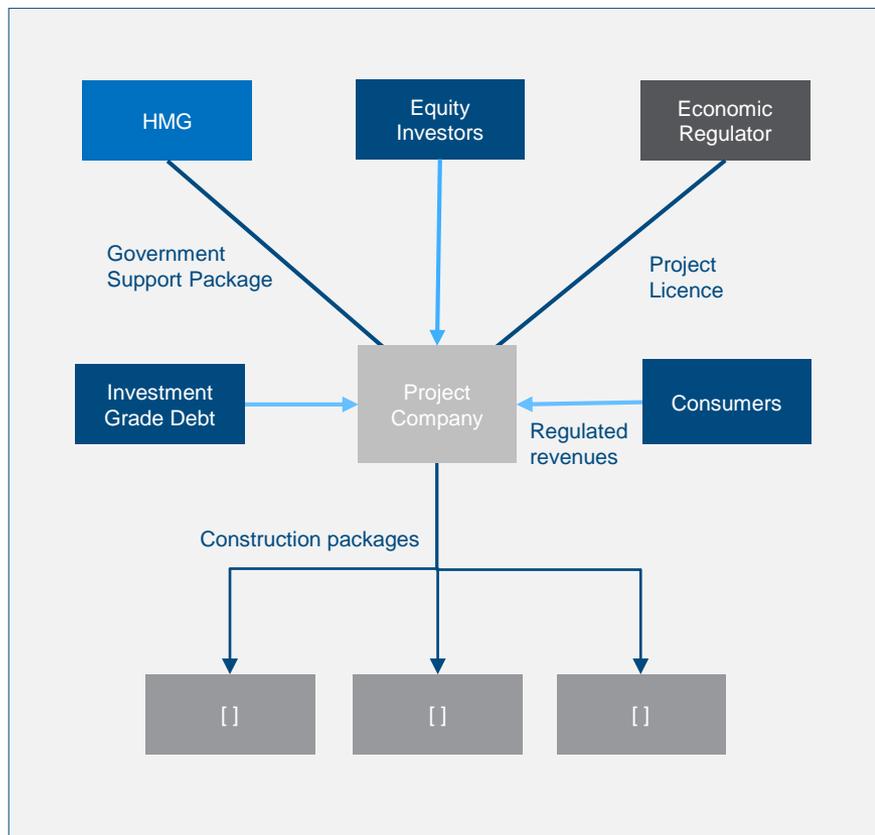
Use precedents for regulatory approach

- Regulated asset base models are well understood and widely applied in the UK. They have traditionally been used for privatised monopoly infrastructure sectors (e.g. water, rail, energy networks)
- RAB models have recently been applied to large-scale single-asset construction projects such as Heathrow T5 and Thames Tideway Tunnel, providing a useful precedent for RAB



How does a RAB model work? – Example from TTT

Key parties



Note: Outline of the approach used for Thames Tideway Tunnel . It should not be assumed that any or all features will be replicated for a nuclear RAB

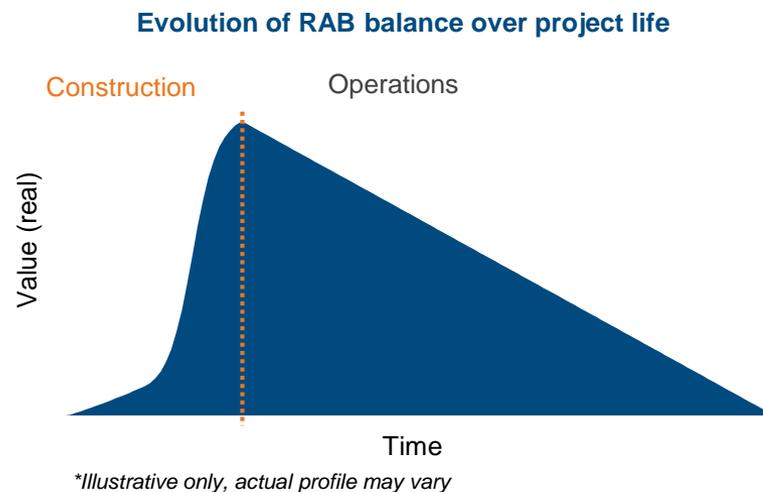
Main Principles

- Construction of the **Thames Tideway Tunnel is the closest proxy** for a potential nuclear RAB. TTT has been financed as a greenfield project with its own regulated model to enable private sector ownership and funding separate from Thames Water.
- Project company obtains **a licence from the economic regulator** to construct and operate the asset. The regulator has a duty to ensure that the project company can finance its activities (among others).
- Allowed revenues **are charged to consumers during construction** to recover certain costs, including financing costs.
- Allowed revenues enable the project company to cover **reasonably incurred costs and a return on capital**.
- Construction risks are shared between investors and consumers up to a pre-determined level** (“Threshold Outturn”) where these risks cannot be passed down to the supply chain.
- HMG provides a Government Support Package** that provides risk protection for certain well defined, remote risks such as:
 - Cost overruns** in the event that the required funding is above the Threshold Outturn;
 - A backstop for certain required **insurances**;
 - Discontinuation support** in the event that Government decides not to continue the project; and
 - Financing in the event that **debt markets become disrupted**.

TTT: Asset base and allowed revenues in a RAB model

RAB Build up

- During construction, capex spend is logged onto the RAB, up to a pre-agreed level.
- The RAB is then depreciated over an operational period, allowing investors to recover their investment.
- Importantly, unlike for regulated utilities, the regulator does not perform an *ex post* review of whether construction costs are efficiently incurred.
 - Project costs are determined at the outset - up to the baseline, there are very limited circumstances in which costs are not allowed onto the RAB.
 - Baseline cost recovery is therefore not subject to the regulator's opinion after expenditure has been incurred.
 - Cost overruns above the baseline are subject to a sharing mechanism between consumers and investors.



Allowed Revenue Building Blocks

- Consumers are charged allowed revenues during construction and operations based on a set of 'building blocks' that allow the company to cover efficiently incurred costs and generate a return on its capital invested.



- The WACC is competitively bid at the outset for the construction period plus a short period of operations to allow the project to reach steady-state. It is then reset by the economic regulator on a periodic basis during operations.
- Consumers will pay the WACC during construction, which allows for risk sharing and reduces the capital requirement that would be required by rolling up interest.

Note: Outline of the approach used for Thames Tideway Tunnel. It should not be assumed that any or all features will be replicated for a nuclear RAB

Discussion & Questions

<https://www.gov.uk/government/consultations/regulated-asset-base-rab-model-for-nuclear>