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

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Department for  
Business, Energy  
& Industrial Strategy



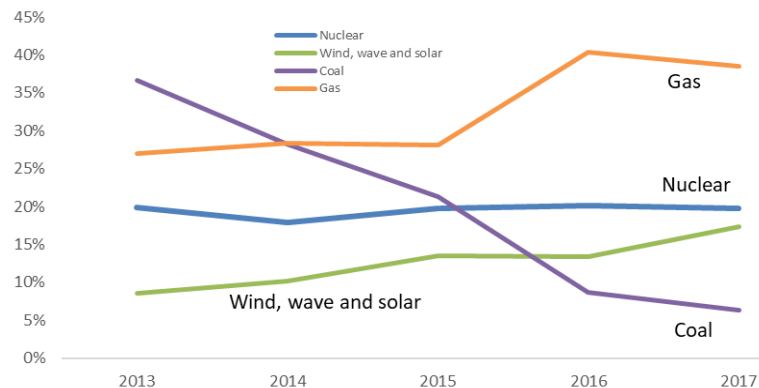
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# The UK nuclear context

## 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
<b>Total: 15 units</b>		<b>8883 MWe</b>		

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

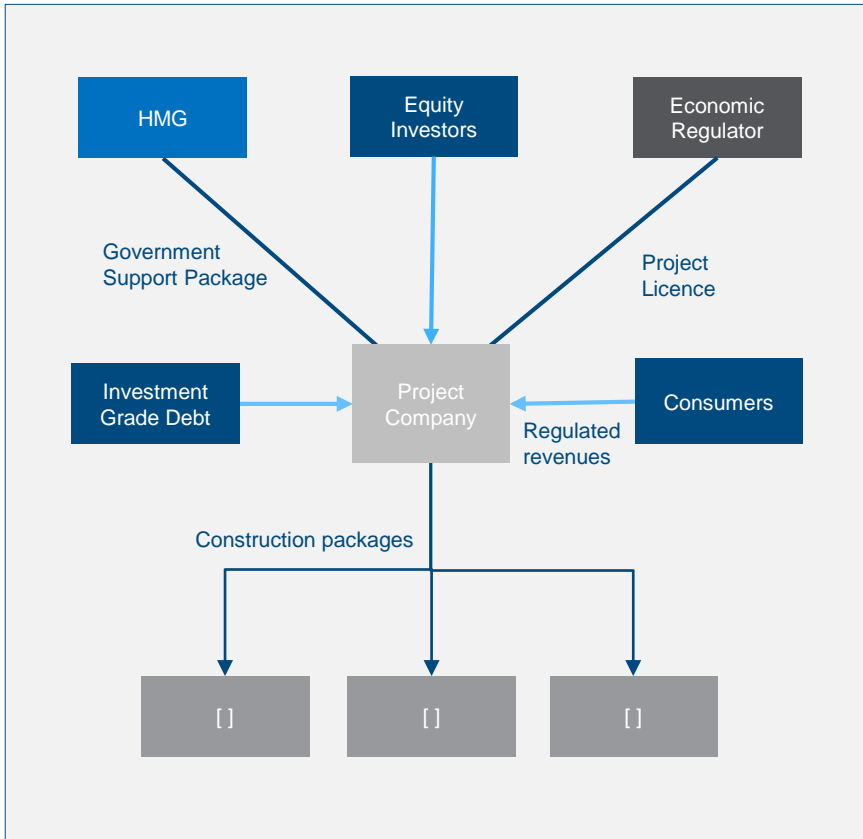
## Use precedents for regulatory approach

- 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

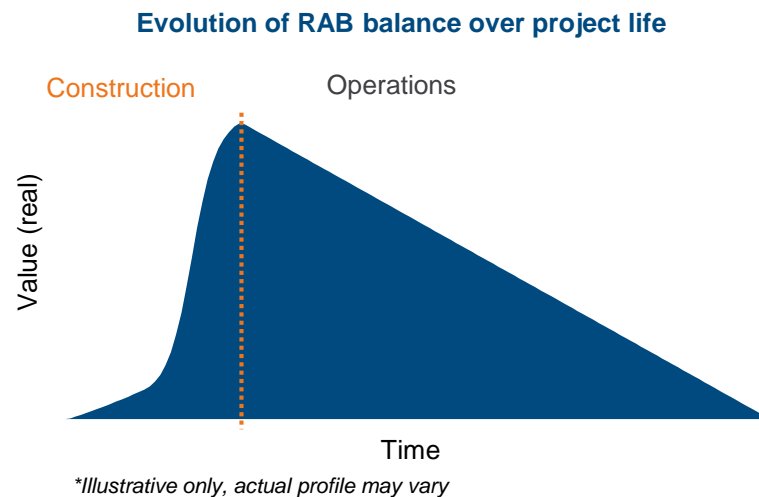
## Main Principles

- 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.



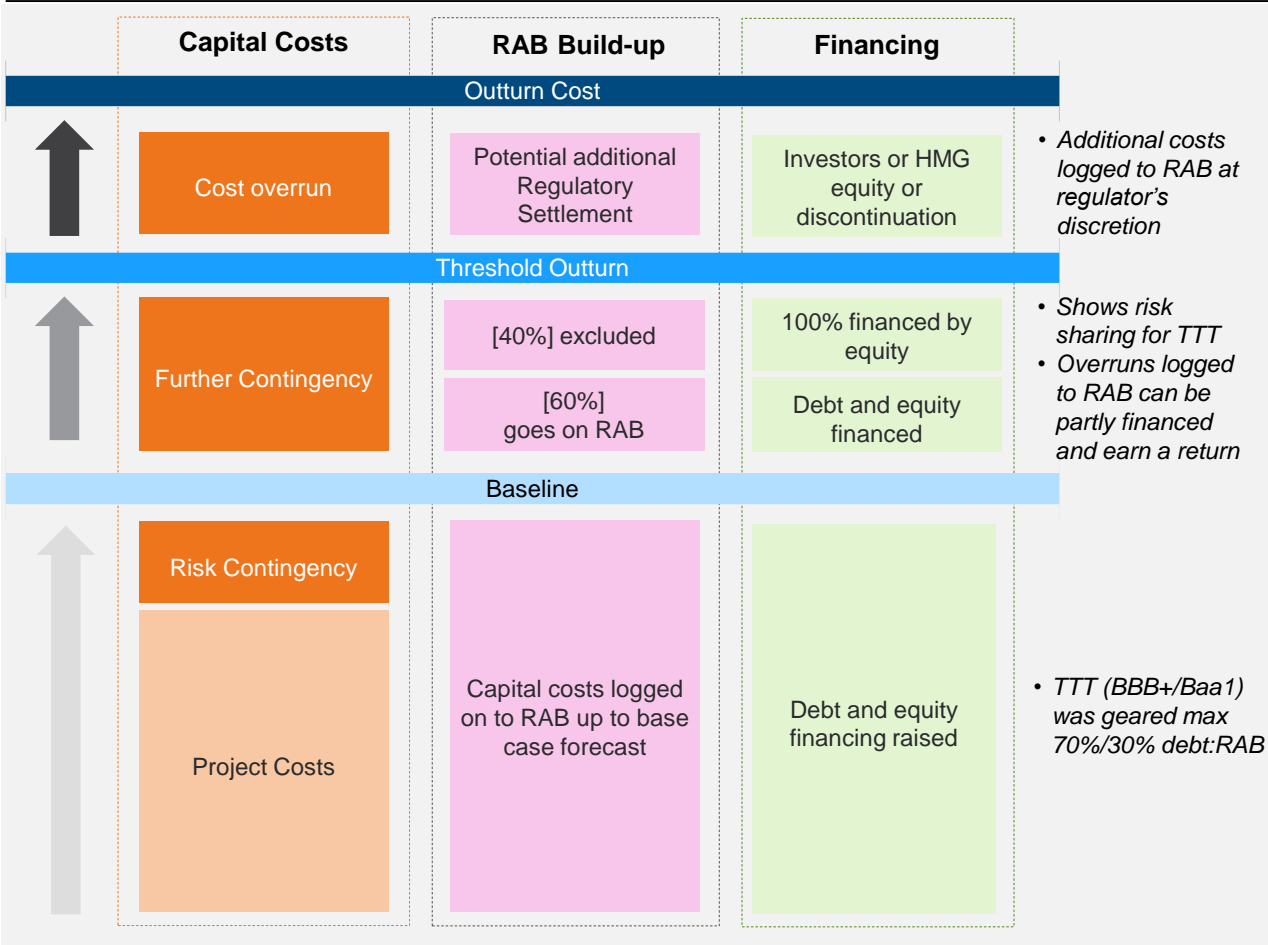
- The WACC is competitively bid at the outset for the construction period plus a short period of operations to allow the project to reach steady-state. It is then reset by the economic regulator on a periodic basis during operations.
- Consumers will pay the WACC during construction, which allows for 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*

# Regulatory risk sharing and incentives

- Base case capital costs for a newbuild nuclear powers station are in the order of £15-£20bn real overnight

## TTT Construction Incentives



## Operational Incentives

- During operations, the economic regulator will periodically reset the WACC and determine allowed revenues.
- Regulatory settlement for opex and capex (subject to economic and efficiency incentivisation tests).
- WACC expected to be subject to indexation using [RPI / CPI].

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

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