FINANCING A NEW NUCLEAR POWER PLANT AND MANAGING THE RISKS

EXPERIENCE FEEDBACK FROM HINKLEY POINT C PROJECT

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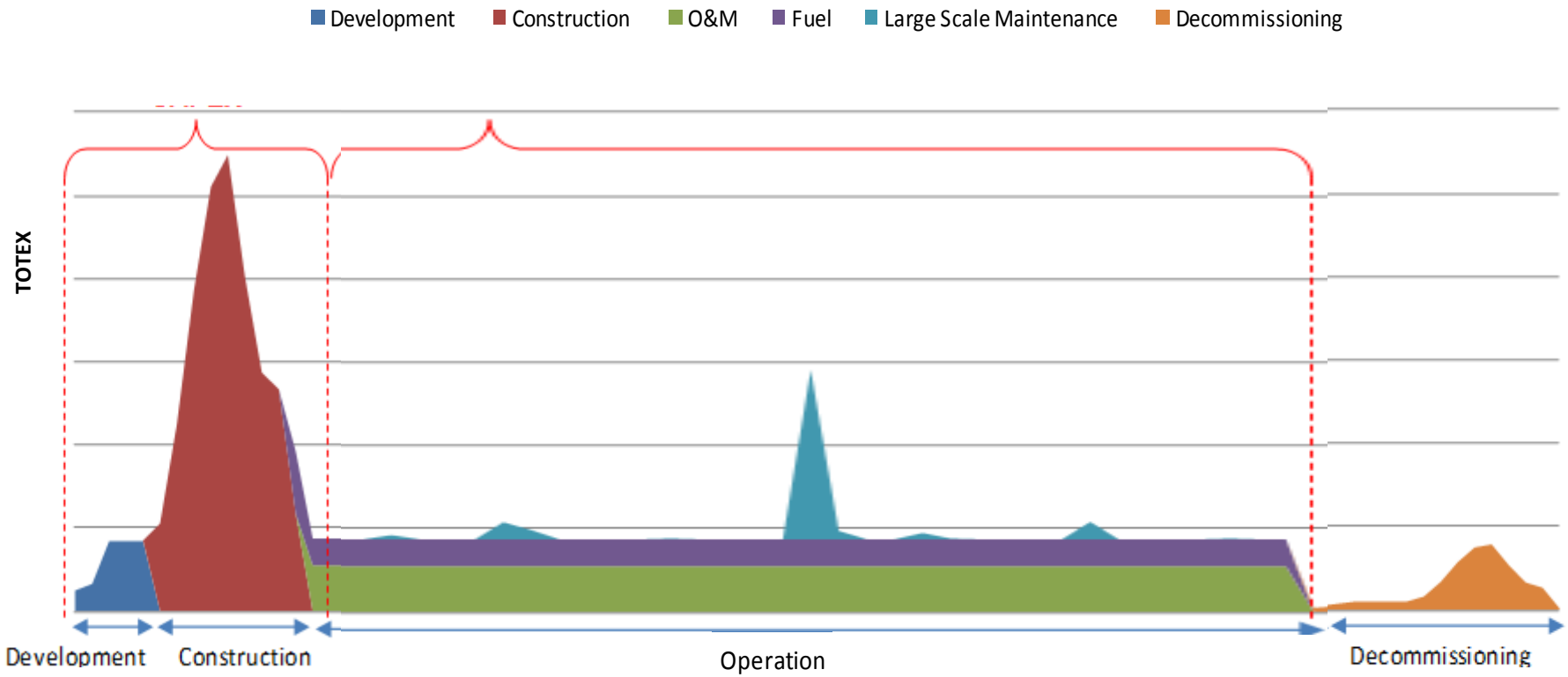
STANDARD COST DISBURSEMENT OF A NUCLEAR POWER PLANT



O&M including large-scale maintenance (replacement of steam generator) fuel → **very predictable costs**

Engineering, equipment procurement, construction/erection and commissioning costs

Engineering studies, site characterization and preparation, studies for licensing and permitting process, human resource development, public acceptance action plan, reservation and procurement of long-lead items, etc.

Civil works, transportation, treatment and storage of nuclear waste and project management

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NUCLEAR PLANT PROJECT
KEY BANKABILITY REQUIREMENTS

eNPM®

KEY NON FINANCIAL REQUIREMENTS

NUCLEAR SAFETY FIRST !

Strong support from the State
to provide visibility on long-term political commitment at national and local levels

Key stakeholders support
including **unions** and **public acceptance**
solid integration of environmental and social impacts

KEY FINANCIAL REQUIREMENTS

Shareholders' reputation and financial strength

Strong and stable legal and regulatory framework

Long term visibility and certainty on revenues during operations

KEY BUSINESS REQUIREMENTS

Proven / Approved technology

Nuclear project management & operational **experience of the Owner/Operator**

Experienced main contractors with in-house design capabilities

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RISK ALLOCATION

eNPM®

1. Political and regulatory risks

- Lack of public acceptance
- Lack of political support
- Unclear / non-predictable legal and regulatory framework
- Licensing and permitting processes

2. Construction risks

- Project management risks
- First of a kind Technology Risks
- Difficult dialogue between the Owner-Operator and the Nuclear Safety Authority

3. Operation risks

- Nuclear operation safety
- Difficult dialogue between the Owner-Operator and the Nuclear Safety Authority
- Natural disasters risk on site or in the world
- Electricity Market Risk

4. Decommissioning & Waste Management risks

- Poorly defined decommissioning strategy
- Unbalanced financial and technical responsibilities between stakeholders
- Costs undervaluation

Equity providers	✗	✓	✓	**Revenue certainty**	✗
Debt providers	✗	✗	✗	✗	✗
Debt guarantee	✓	✗	✗	✗	✗
Political	✓	✗	✗	✓	✓

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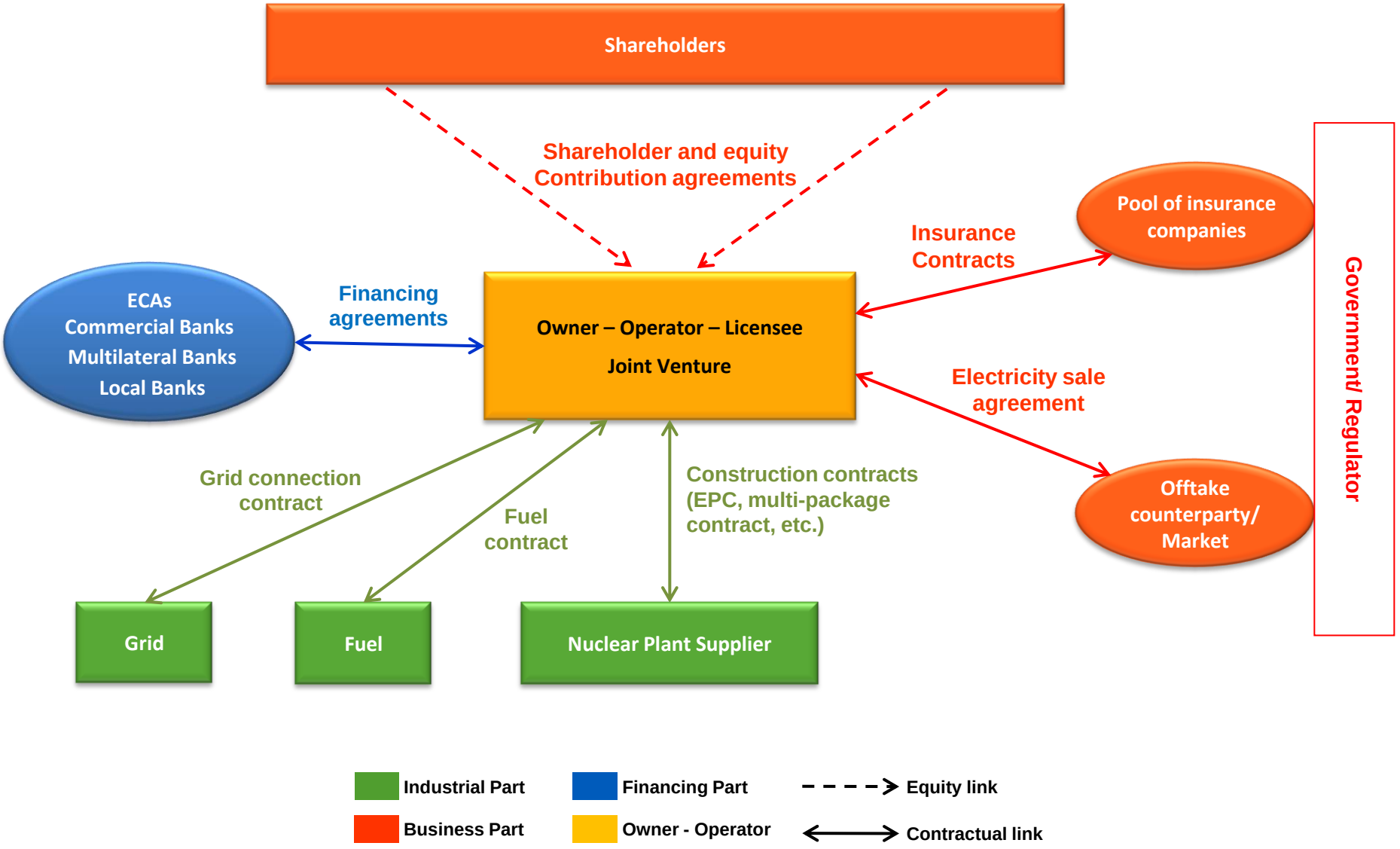
NUCLEAR PLANT PROJECT BUSINESS CASE MAP

For illustration purpose



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HINKLEY POINT C

2 EPR Reactors (Gen III+)
3,277 MW

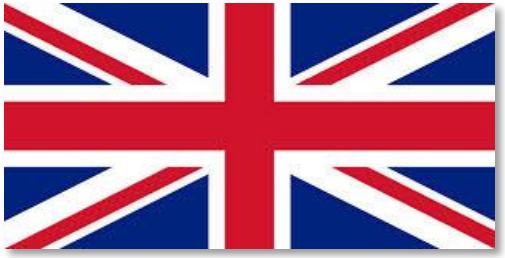
- **Total investment: £18bn**
- **Construction costs: £16bn**
- **Other project costs: £2bn**

- **5th and 6th EPR reactors**, the 3rd EPR project of EDF

- Contribution to the regional economy during peak construction: **£100m/year**
- Contribution to the regional economy during operation: **£40m/year**

- **> 5,600 workers during peak construction**
- **25,000 jobs over the construction period**
- **900 permanent jobs created for 60 years**

- **> 7% of the UK's electricity demand**
- **9m tonnes of CO_2 saved per year**



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A LONG JOURNEY TO GET TO FINAL INVESTMENT DECISION

2009 to 2013	October 2013 announcement	October 2013 – October 2014	October 2014 – January 2016
2011 • Planning permission for site preparation works **2012** • Agreement with local authorities on measures to address impacts of HPC development (Section 106) • Nuclear site licence • Generic Design Assessment of EPR design	**Contract for Difference (CfD) Heads of Terms** 35-year duration with a strike price: £92.50/MWh (or £89.50/MWh if EDF takes a final investment decision for Sizewell C)	**Contract for Difference (CfD)** Ongoing discussions on drafting the full CfD	**Contract for Difference (CfD)** Strike price over a 35-year term of £92.50/MWh (reduced to £89.50/MWh if EDF takes FID for Sizewell C) in 2012 terms. Strike price fully indexed to CPI.
	Infrastructure and Projects Authority (IPA, formerly IUK) guarantee Public confirmation of eligibility	**IPA guarantee** Ongoing due diligence of the project by IPA and Agreed Financial Terms submitted to the European Commission	**IPA guarantee** The availability of an initial £2bn of the Government's Infrastructure Guarantee Scheme was announced by the Chancellor in September 2015
2013 • Three main environmental permits • Full planning consent • Marine licence	**Equity partners** EDF Group (45-50%), Letters of intent from: Chinese partners (CNNC + CGN: 30-40%), Areva (10%). Other partners (up to 15%)	**Equity partners** Ongoing discussions and due diligence by potential investors	**Equity partners** EDF Group and CGN will fund the £18 billion investment, CGN initially financing £6bn (33.5%). EDF may sell up to 15% of its stake but would maintain a majority holding
		State Aid European Commission approves the CfD, the Funded Decommissionning Plan (FDP) and IPA Guarantee	**Funded Decommissioning Programme (FDP)** Agreement with the UK Government on the full contract and accompanying documents, incl. State Aid approval for the Waste Transfer Contract

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HINKLEY POINT C BUSINESS CASE MAP

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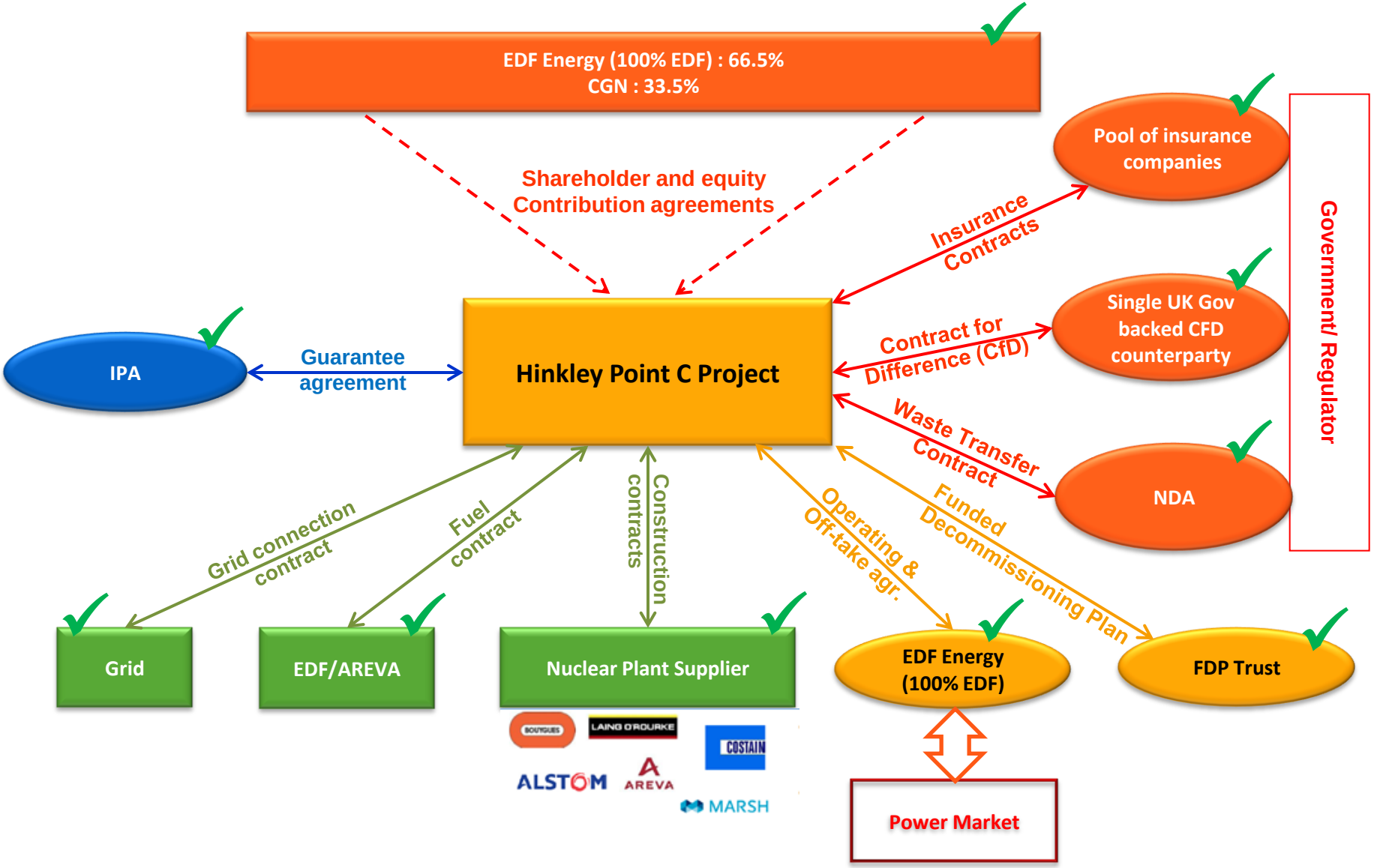

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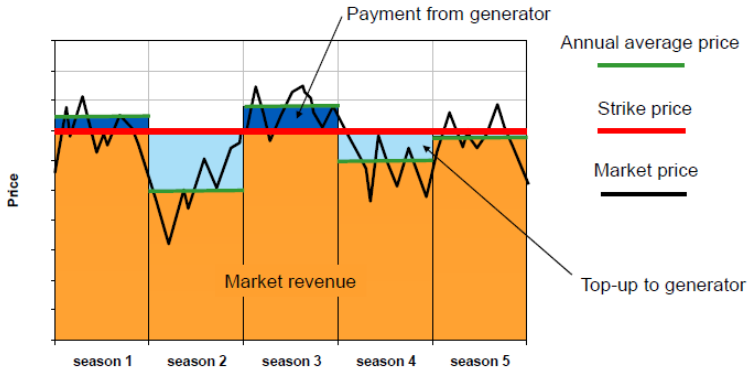
THE CFD : THE BACKBONE OF THE BUSINESS CASE

- **Private law contract** between the UK-Government-backed CfD Counterparty and the project company

- **Guaranteed "Strike Price" over a 35-year term** providing long-term visibility and stability of cash-flows:
  - Strike price of **£92.50/MWh** (reduced to £89.50/MWh if EDF takes FID for Sizewell C) in 2012 terms
  - Strike price **fully indexed to CPI**



- **The result of a long process:**
  - **Wide consultation** of all stakeholders (including public consultation) to get support on the mechanism and ensure strong **cross-party political endorsement**
  - Numerous studies of **independent consultants** showing new nuclear is necessary for decarbonisation of UK at the lowest price and geopolitical security of supply
  - **Tough and long negotiations with UK Government** to get to the price (detailed audits and reviews) and to agree all the conditions of the contract
  - **Detailed State Aid review** (1 year) by the European Commission to get approval

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LESSONS LEARNED TO SECURE FUNDING FOR NNB PROJECTS

1. Be prepared for a long, tough and multi-dimensional process
2. Engage all the stakeholders reasonably early as time is needed to educate all of them
3. Adopt a partnership approach with local and national level authorities and government - It is needed to create a bankable investment framework and get appropriate support in key approval processes (e.g. EU State Aid)
4. Make sure all the aspects of the business case are supported by robust arrangements to attract investors and lenders, in particular:
   a) work on the adequate tool to provide revenue visibility/certainty (e.g. CFD)
   b) prefer a financially robust developer who has gained experience and can significantly de-risk the project prior to construction
   c) ensure sufficient maturity of the design and progress in procurement to secure cost estimates and schedule
5. Be prepared for detailed audits and due diligence by experienced institutions and companies!

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THANK YOU FOR YOUR ATTENTION

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