

Making CfDs work for renewable generators

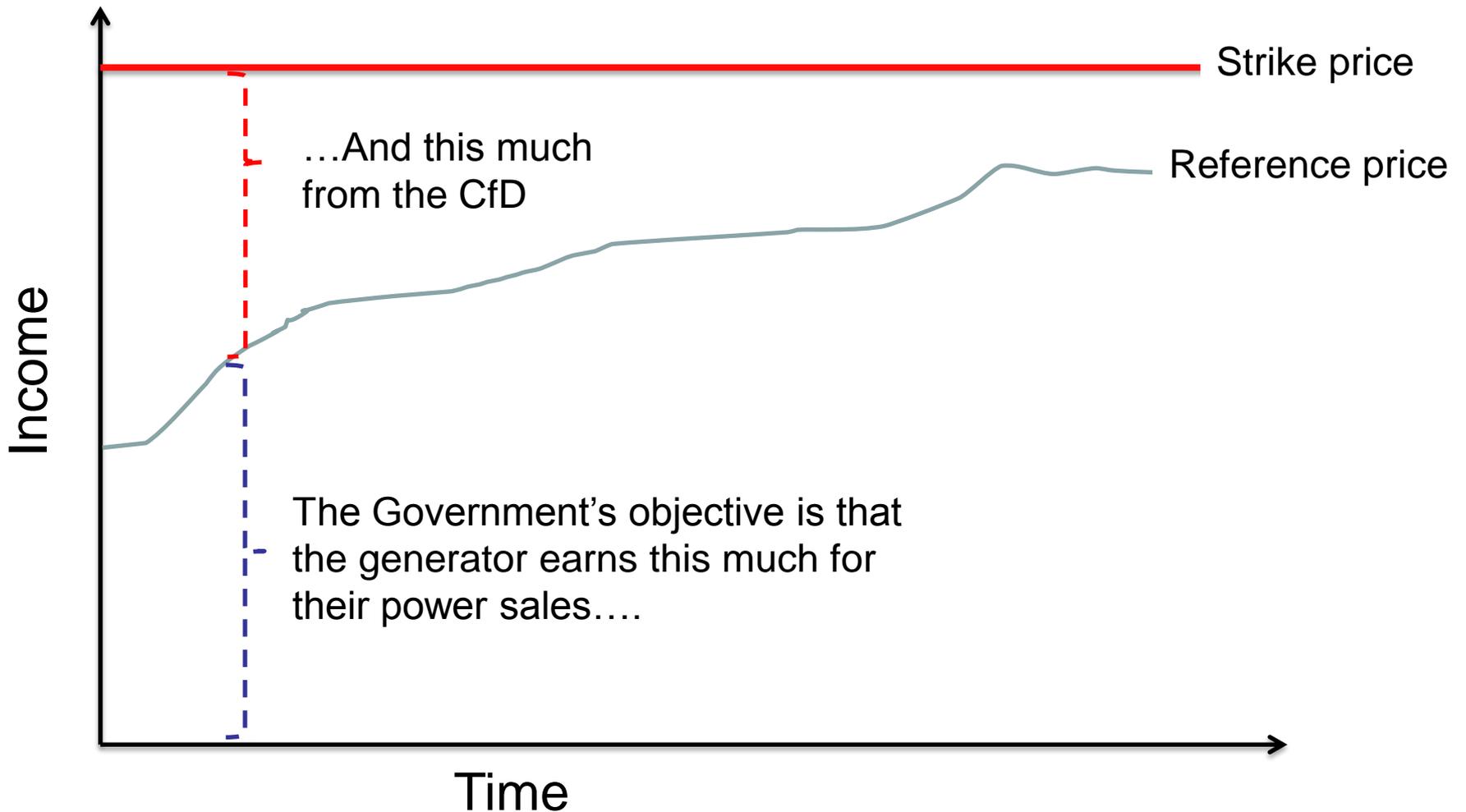
This is in two parts.

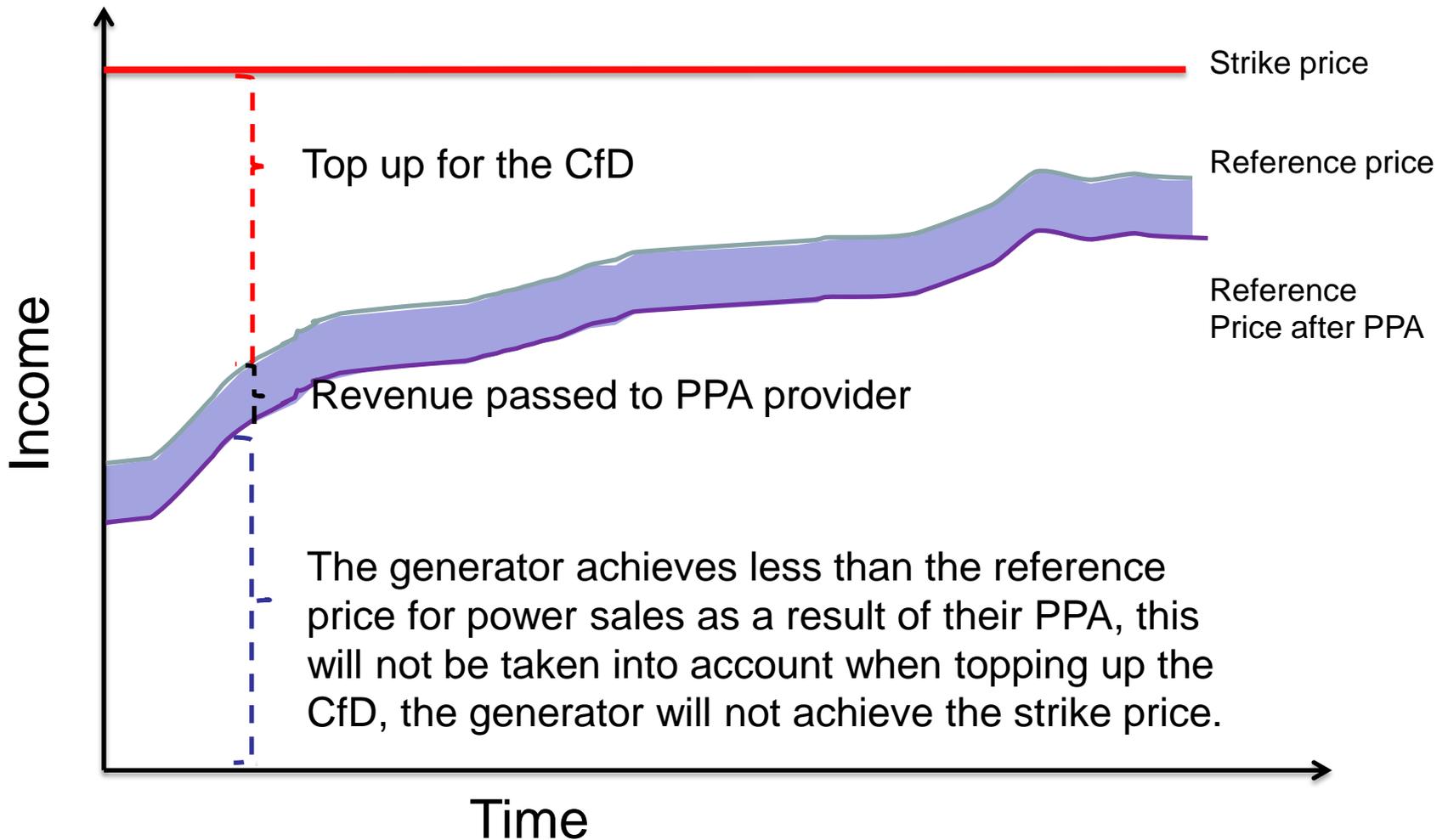
1st - a brief introduction to the Green Power Auction Market.

2nd - gives more detail on the structure and follows on.

We consider this a critical issue for independent generators and will ask for your support.







There are three possible solutions

1. Increase the strike price to compensate
2. Independent generators get squeezed out of the market
3. Auction the power, in the same way that the NFFPA auctions the power from the NFFO contracts. Each project will have its own reference price.

Of these solutions

1. Increasing the strike price increases cost to consumers, and might overcompensate vertically integrated generator/suppliers relative to others.
2. Squeezing independent generators out of the market will fail to deliver low carbon investment and attract the funds.
3. Auctioning the power, ensures all generators achieve the strike price and allows suppliers to value the output, along with any imbalance risks.





This is the end of the brief introduction,
A more detailed evaluation follows.

If there are any questions or if you would like
to support this proposal please contact

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Green Power Auction Market: Viable Independent Generation under EMR

BANKSGroup
development with care

The **co-operative** bank
good with money

 **Fred.Olsen Renewables**

Falck
Renewables

 **Good Energy**


infinis

 **MAINSTREAM**
RENEWABLE
POWER

 RENEWABLE
ENERGY GENERATION

RES


velocita
THE NATURE OF ENERGY

Defining the Problem

Objectives of the EMR: delivering low carbon electricity at least cost

Delivery is subject to independent generators to securing a viable route-to-market (a PPA).

Only a limited number of companies offering viable long-term PPAs

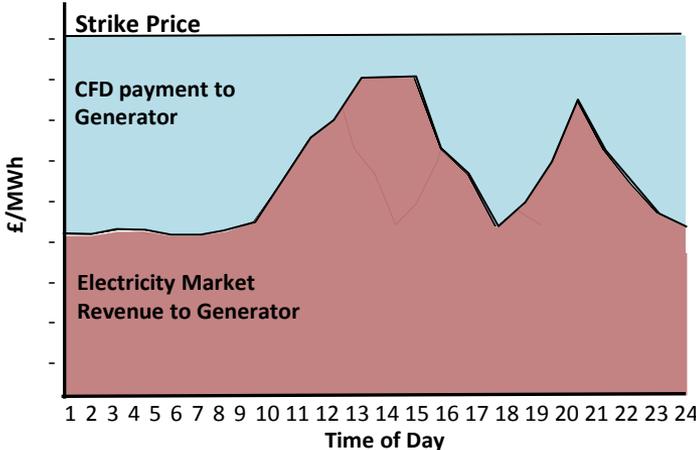
The costs charged appear significantly higher than estimates on the cost of balancing and international comparators.

- Either the strike price has rise to accommodate this extra cost
- Or independent generation risks being forced out of the market.

PPAs & Returns

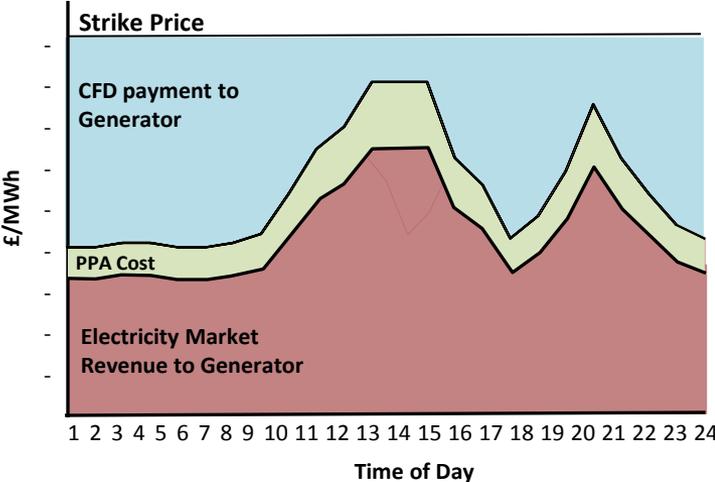
Idealised CfD Structure

Strike Price set to give a 10% return



Actual CfD Structure

Independent generator receives an 8% return

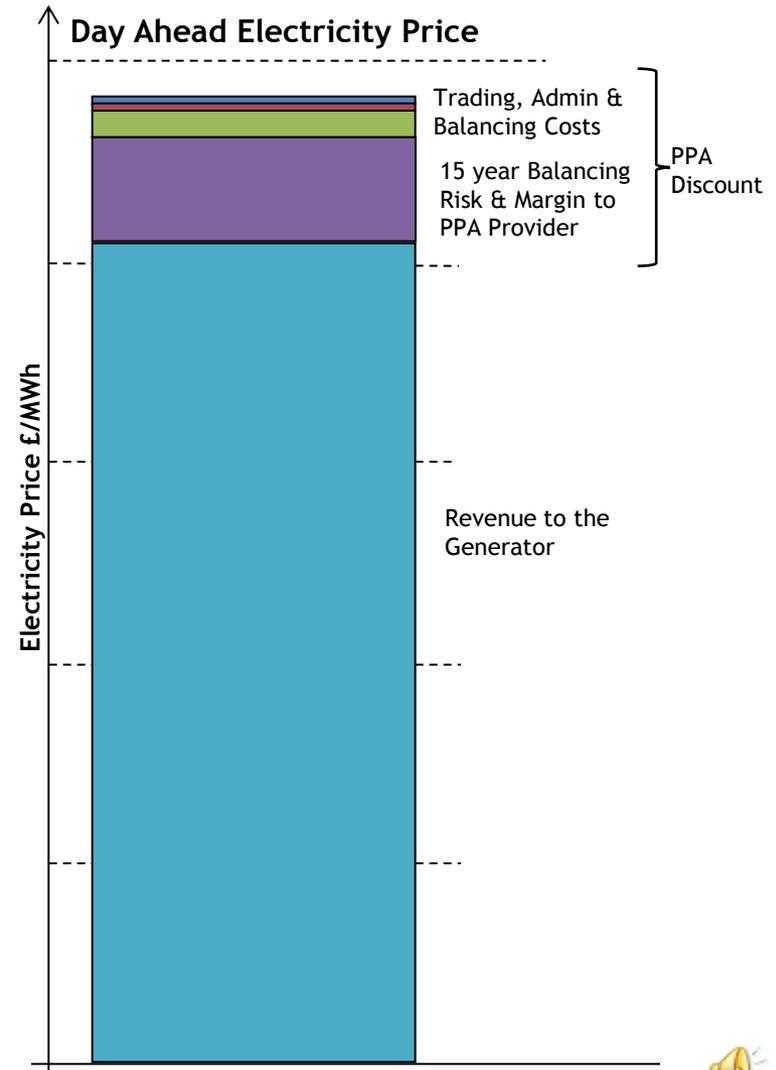


PPA Margins Appear High Compared to the Costs

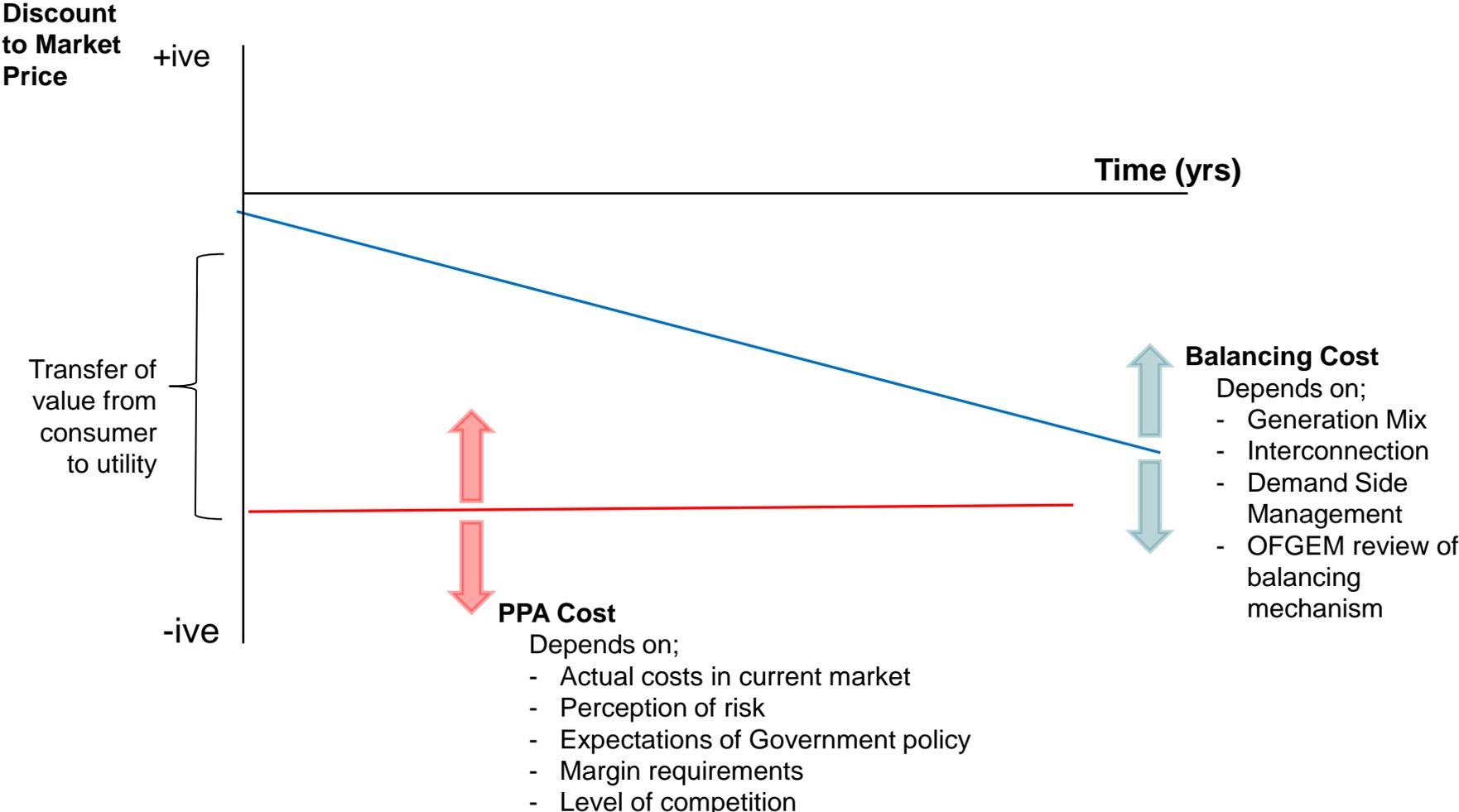
- The discount charged is set to cover
 - The cost of trading
 - Administrative expenses
 - The cost of balancing
 - Long term risk
 - Margin to the PPA provider.

Cost (% of wholesale price)	Source
10-20%	Current PPAs Terms
1-3%	Nordpool Contracts
3%	Avg NFPA Discount (last auctions)
3-4%	Estimate by Newberry (2011)

- The additional cost could add £11/MWh onto the strike price.



Pricing Long Term Balancing Risk



Barriers to PPA Competition

- Competition is limited by;
 - Finance requirements need for a long term PPA to cover;
 1. Short term trading risk;
 2. Long-term Balancing risk;
 3. Uncertainty whether short term PPAs will renewed.
 - Companies ability to offer long-term PPAs is restricted by;
 1. A sufficient credit rating
 2. Willingness to enter the market
 3. Willingness to accept exposure to long term balancing risk
 4. Willingness to accept the risk profile required by financiers
 5. Administrative Cost of providing PPAs to small plant.
- Leads to limited number of companies and lack of competition.

Proposed Solution; Green Power Auction Market

Site's output is auctioned on a rolling auction for 6 mths of output.

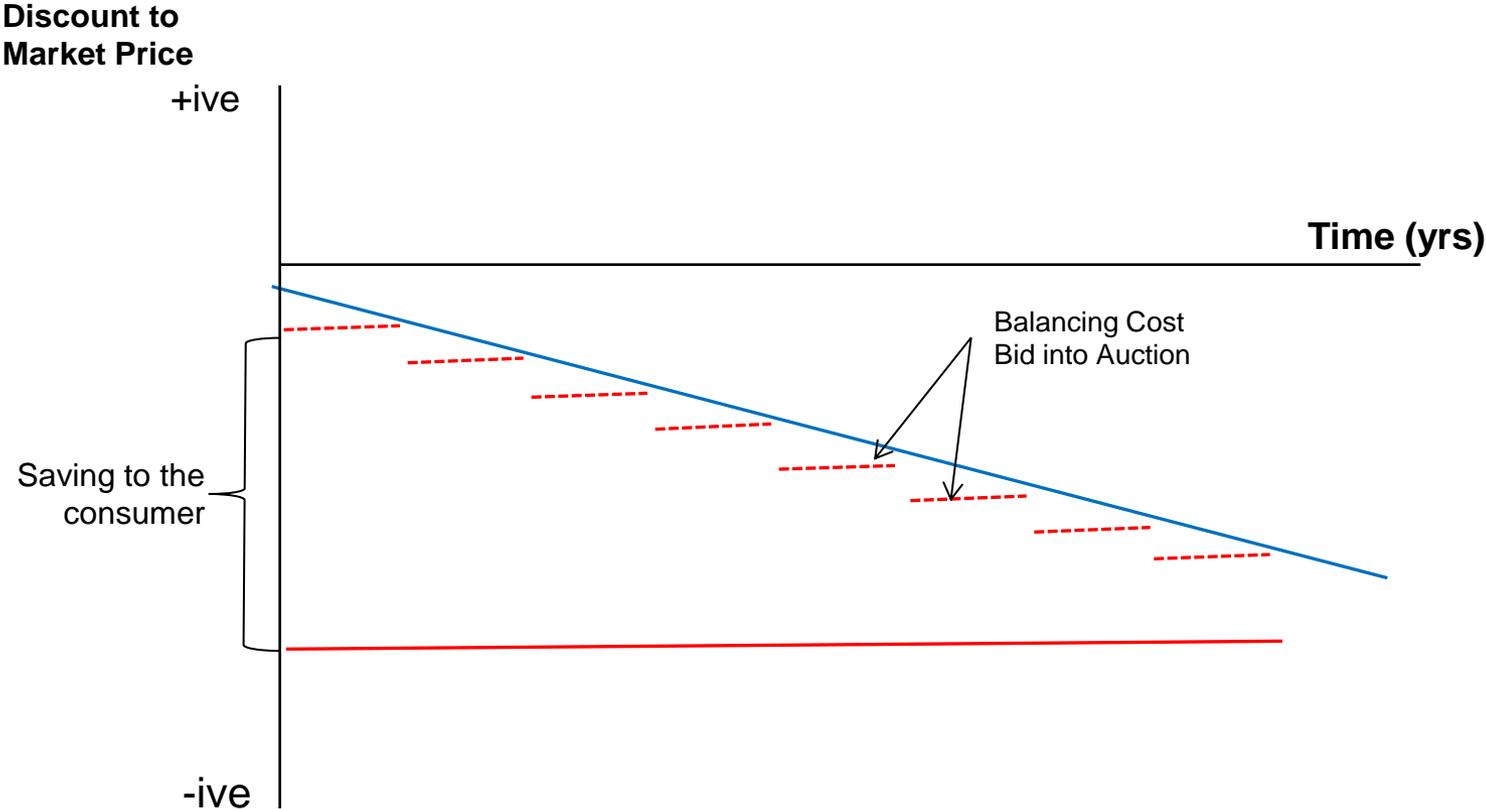
The auction price sets the market reference price, from which the CfD payment is then made.

Breaks down long-term PPAs into Financeable short-term auctions

Providing;

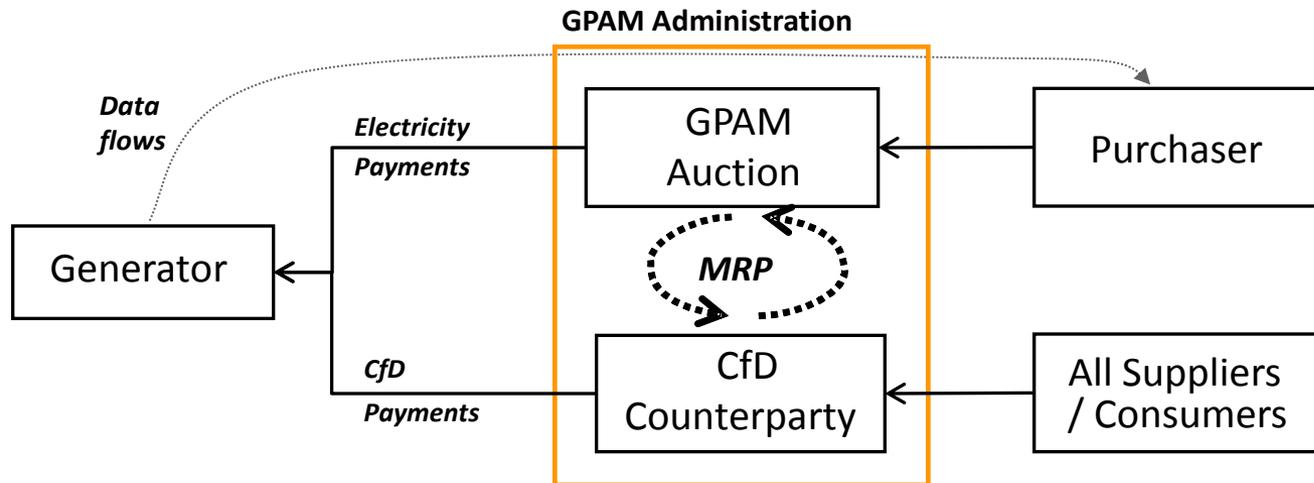
- Route to market for independent generators.
- Market access for smaller suppliers / new entrants.
- Liquidity into the market
- Lowest costs to the consumer.
- A non-regulatory intervention.
- Implemented through existing market structures.

Reduced Risk Premium Reduces Costs to Consumer



GPAM : Principles

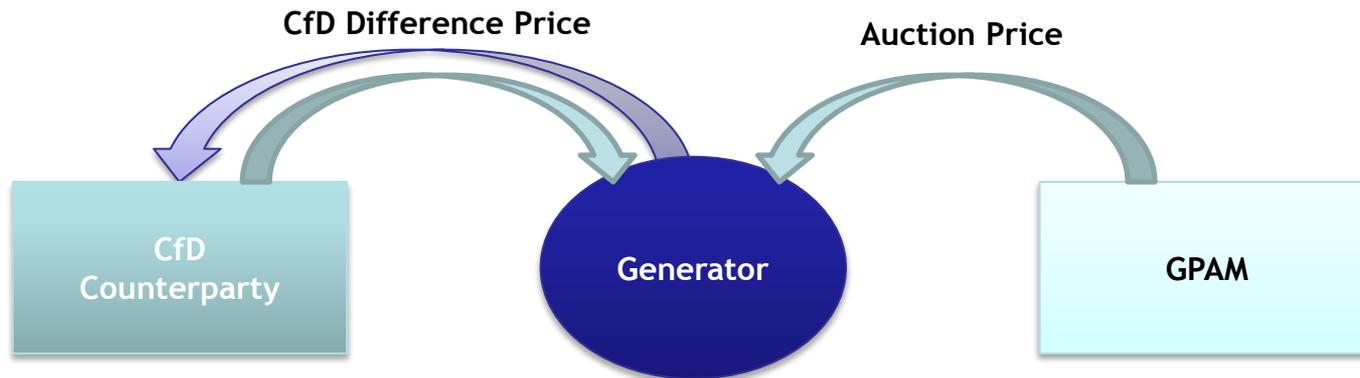
Structure	Existing NFPA structure	Site-by-site Auctioning
Auction	Full output for a 6 month (or longer) period	Site specific auction price sets the market reference price (MRP)
Seller	Provides historical and expected performance data	Provides operational data (Scada links etc)
Purchaser	Meter registration transferred to purchaser	Takes the balancing risk
Default	Default price is set at zero.	



GPAM: What it Provides to Generators:

Provides a Route to Market that:

- Delivers for all generators independent of size
- Transfers balancing risk to purchasers (who are best able to handle it)
- Enables 3rd Party debt financing
- Provides an opportunity to compete on a fair basis in future auctions
- Standard contractual terms



Example Site	<u>CfD Reference Price £70</u>	<u>CfD Difference</u>	<u>Net to Generator</u>
	auction price - period one £40	£30	£40 + £30 = £70
	auction price - period two £35	£35	£35 + £35 = £70
	auction price - period three £80	-£10	£80 - £10 = £70

(in the first operational period, a site can be auctioned on the basis that it starts generating part way through a period - although typically it will receive less for this part period)

GPAM: What it Provides to Suppliers / Purchasers:

Flexibility	Power available on shorter term basis than PPA market.
Liquidity	Products that are priced on a mid term basis (6mths or longer) pulling liquidity back from the day-ahead market.
Convenience	Standardised contracts across many plants.
Diversity	Ability to define a varied portfolio “in one go” from a diverse mix of types of generation and a broad geographical range of locations.
Access	Ability to access generation capacity that would otherwise be tied up in long term contracts with the large utilities.
Traded Commodity (Fungible)	The purchaser can draw a direct comparison between the auction price and the season ahead price and trade/arbitrage between them.

GPAM: What it Provides to Government:

A structure that;

- Is attractive to investment funds and new sources of capital.
- Removes the need to estimate long-term balancing risk.
- Increases Transparency.
- Reduces the cost to the consumer.
- Delivers the stated objectives of EMR. In particular;
 1. Providing a stable support mechanism,
 2. Supporting independents and attract new investors into the UK market,
 3. Encouraging investors with a low cost of capital, and
 4. Reducing the cost to the consumer as a result.

Green Power Auction Market: Viable Independent Generation under EMR

The GPAM proposals have been reviewed and their conclusions endorsed by:

BANKS Group
development with care

Falck Renewables



The **co-operative** bank
good with money



 **Fred.Olsen Renewables**



NFPA have confirmed they are able and willing to fulfil key functions.

Positive discussions are ongoing with a selection of financial institutions, lawyers, small suppliers, accountants, consultants and other independent generators.

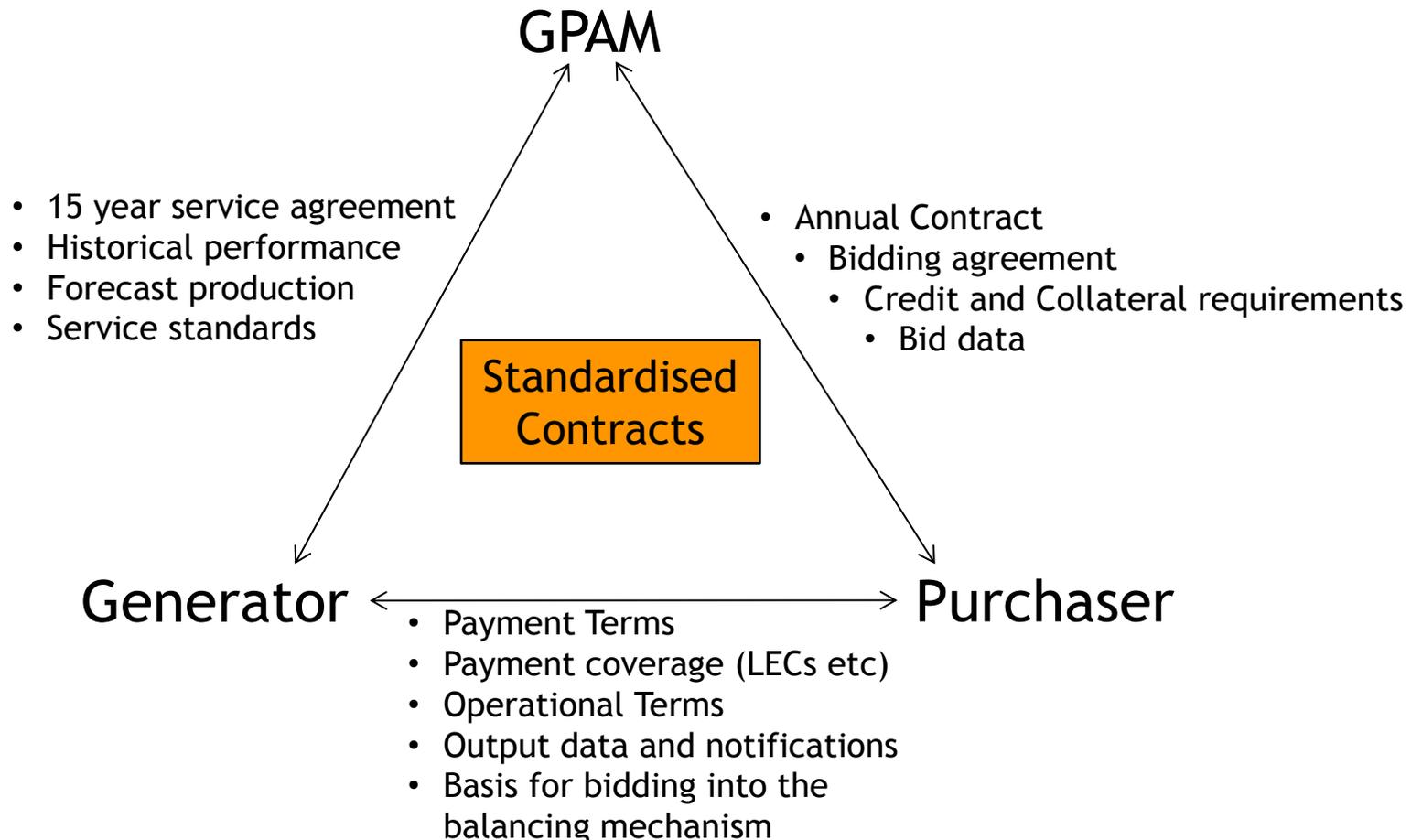
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Standardised Contractual Structures

Standardised contractual terms ensure projects are financeable, reduces transaction costs and reduces barriers to entry for new suppliers / participants

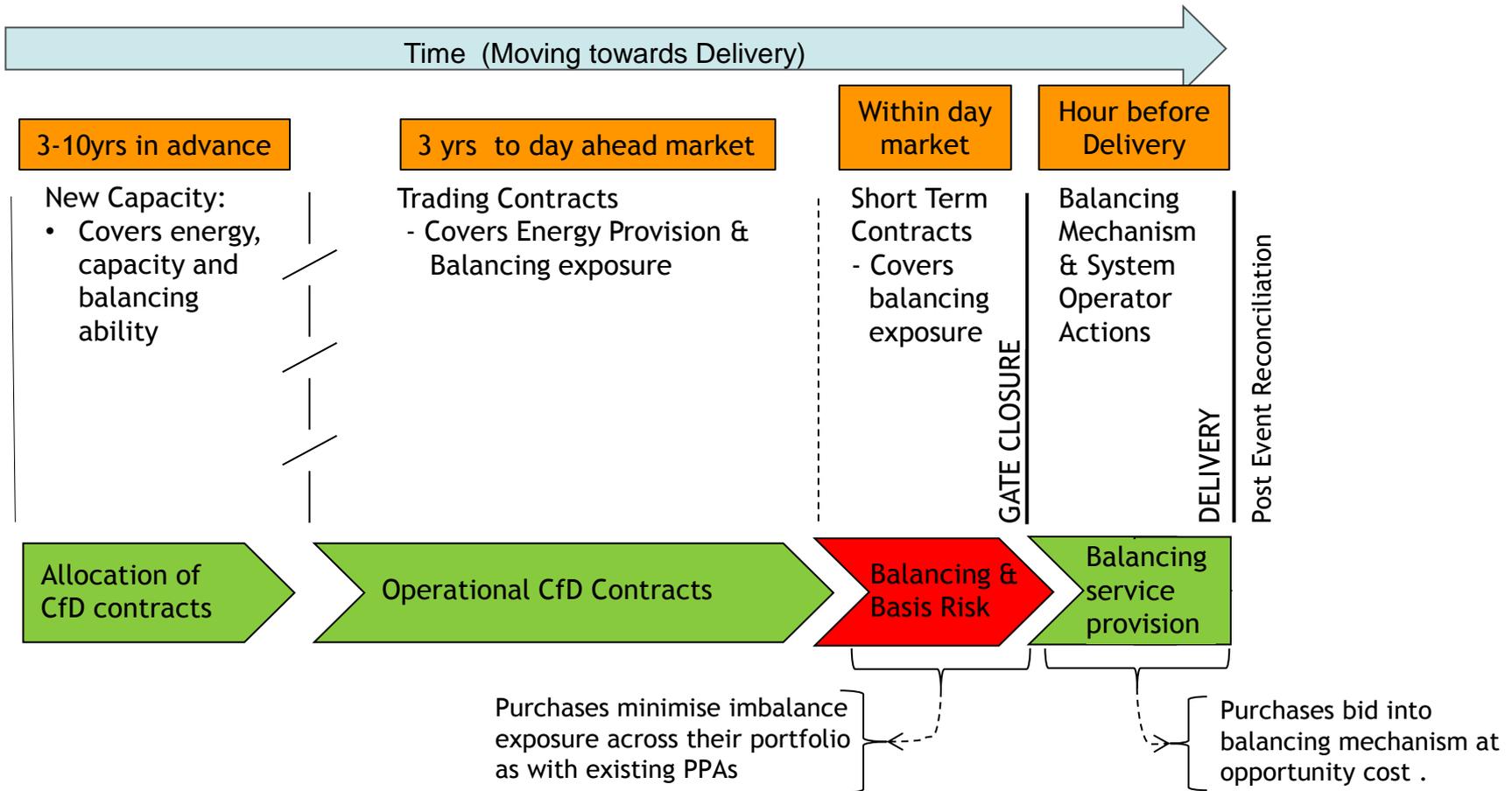


Financial Strength

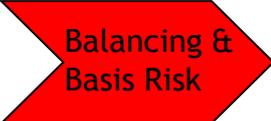
- CfD counter-party is the financial backstop.
- The interface between GPAM and CfD is central to its financial strength. In particular;
 - 1) The site's auction price sets the site's market reference price
 - 2) The default auction price is set as zero
 - 3) The role of GPAM is defined in legislation for the duration of the CfD contract
 - 4) The auction is for a limited period, limiting the risk of default
- Uses a structure with a 10+ year operating history

Manage Balancing Risk within a Broader Portfolio

Estimates (Newberry,2012) suggest that balancing individual plant balance costs between £56-170m/yr more than balancing under a system portfolio.



Fostering Market Participation



Balancing &
Basis Risk

Within Day Market - Energy Market

- Improving portfolio position is managed by the purchaser (as currently the case).
- Energy forecasting managed by the purchaser (as currently the case).
- Recognises that low carbon generation will always be incentivised to generate to access electricity and CfD payment.
- Obligations on generator to provide reliable data and notifications of outages.



Balancing
service
provision

Post Gate Closure - Balancing Market

- Existing market structures for balancing post gate closure
- Terms of entering the balancing mechanism are defined in the contract between the purchaser and the generator.
- Constraint payments again at the opportunity cost of lost generation as with any other generator.
- This provides the national grid a large volume of known cost balancing services on which it can evaluate investment decisions

Auction Competition

True competition in the auction is essential to ensure accurate price discovery. We believe that this will arise due to:

- Historical experience: Last two years 4GW auctioned (wind, landfill gas, CHP, hydro and waste) a half of the winners were 'big-6', other half small suppliers.
- Directly comparable to the broader market price, providing a clear differential.
- Avoidance of a competitor picking up “a bargain” incentivising market activity.
- Increased attractiveness to new entrants and small suppliers due to:
 - Short duration contracts that reduces the exposure to long term risks
 - Low credit requirements (to be balanced against security from default).
- Pre-requisites to enter the auction include a supply licence and being a BSC signatory are thresholds achieved by most financial participants.
- Market Transparency, full history of auction bids gives transparency to the market that minimises opportunity to game or distort the market.

In the unlikely event that the auction trades at a significant discount, due to a lack of participation by large suppliers, then this would suggest broader market competition issues and the need for regulatory intervention.

Site Not Clearing at Auction

It is extremely unlikely that an individual site won't clear at auction, on the basis that;

- Historical experience: Never occurred in 10 year operational history of the NFPA.
- If a site is under bid, simple measures can be taken to highlight the opportunity.

The two scenarios which we are aware of where a site fails to clear are:

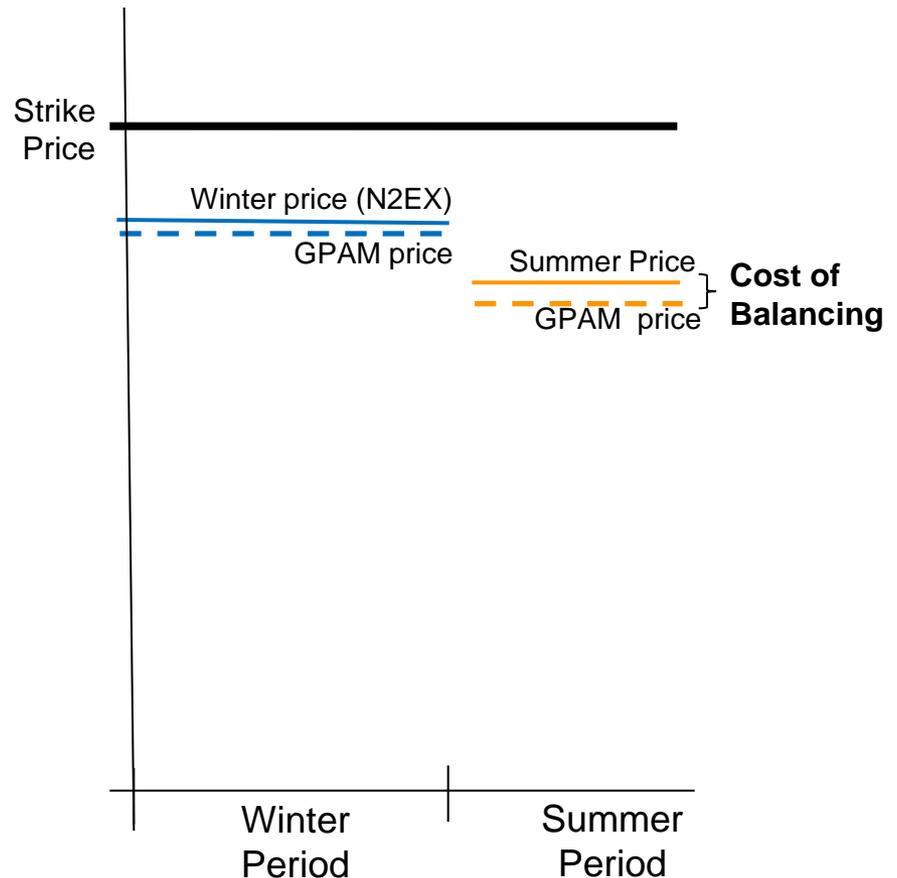
- *Economic Scenario:*
 - A site may not clear if the income from spilling the electricity grid is negative over a 6 month period.
 - Under current market (and proposed) rules this isn't considered realistic.
- *Market Scenario:*
 - A site may not clear if the market is suddenly flooded with additional supply and market capacity is insufficient to absorb it.
 - However, there will be visibility of large volumes coming onto the market, so market capacity can be developed.
 - Any impact will be short term as price differential will attract new entrants

Due to the presence of plausible (if extremely unlikely) scenarios that a site will fail to clear it is important to have the default auction price set to zero to give financiers confidence to invest.

Quantifying Balancing Costs

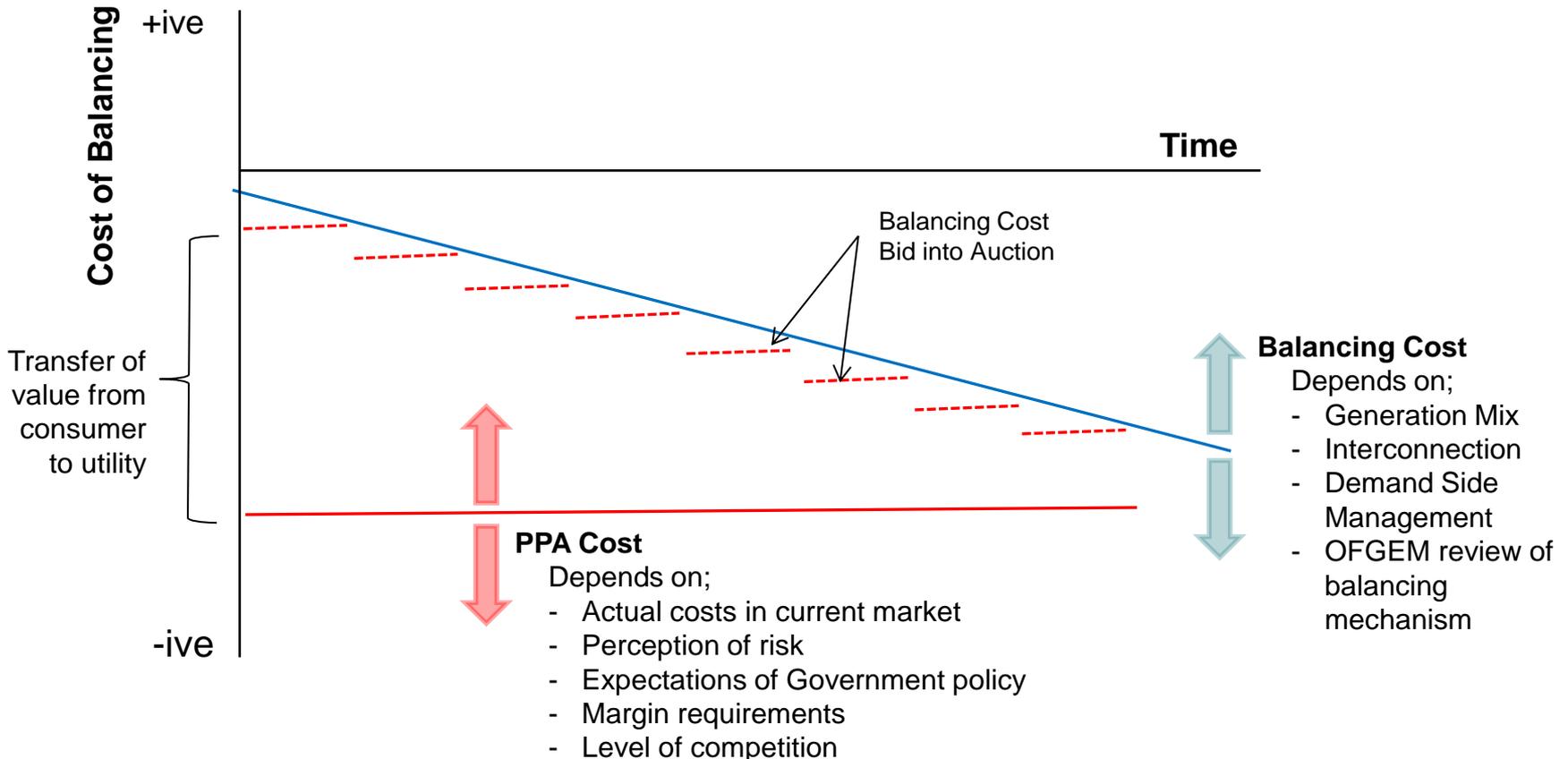
- Directly comparable with the summer and winter ahead prices, allows the quantification of balancing costs
- Over the last 8 NFWA auctions average discount cost of balancing has been 3% with maximum discount at 8%.
- If the strike price is defined to exclude the balancing costs, then GPAM can be used to define compensation for generators in the day-ahead market.
- There are many benefits of GPAM. It could be argued that participation should be mandatory for CfD eligible renewable generation.

Identifying the Cost of Balancing



Reduced Risk Premium Reduces Costs to Consumer

By pricing balancing risk on a shorter time period in the auction, lower risk premiums and caution are passed on to the consumer. In a less competitive PPA market excessive caution can dominate pricing decisions.

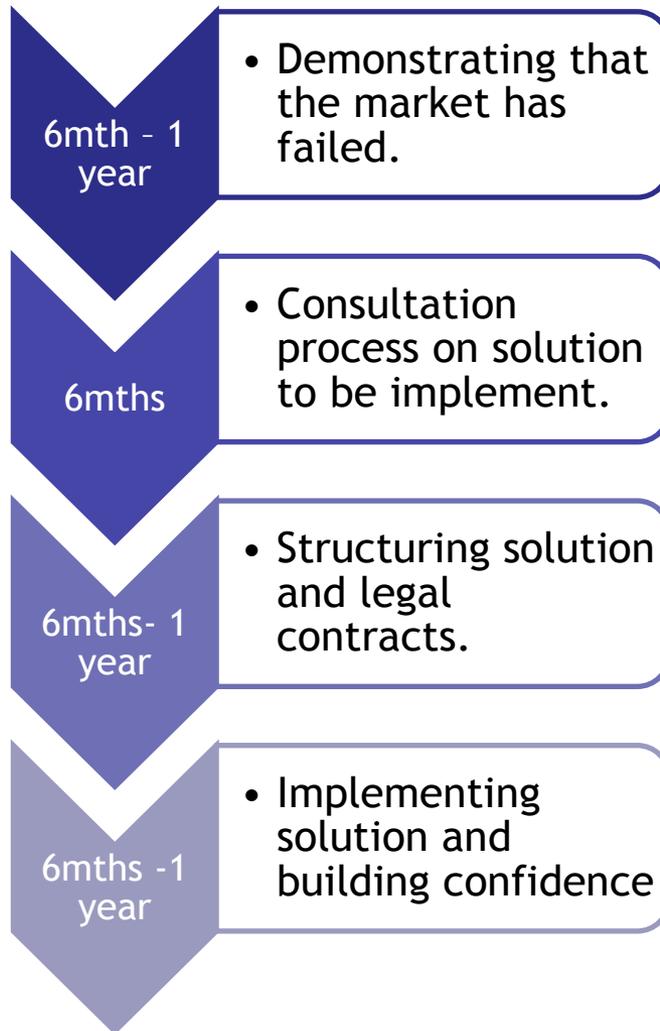


Technology Specific Considerations

- Onshore Wind** Entered into the site auction on a site by site basis,
- Contracts cover the whole site
 - Balancing risk is with purchaser,
 - Operational risk with the generator
- Offshore Wind** Large offshore sites may need to split to ensure competitive tension
- Contracts cover a share of the site,
 - Balancing risk for that share remains with purchaser,
 - Operational risk for the whole site remains with the generator
 - Separate agreement to govern interaction with balancing mechanism
- Thermal technologies (eg biomass)** Entered into the site auction on a site by site basis,
- As with onshore wind
 - Additional contract to govern fuel exposure and maintenance
- New Technologies (eg Marine)** Entered into the site auction on a site by site basis,
- As with onshore wind
 - Looser operational standards for early stage commercial projects (to be updated as technology becomes established)
- Nuclear** Assumption is that it is unlikely to be entered, otherwise it would be treated in a manner similar to offshore wind pieces.

Implemented from Outset; can't wait for Backstop Powers

Time to Implement Backstop Powers



Backstop powers will take too long to implement and a solution needs to be implemented from the outset

Backstop powers scenario

- 1st CfDs expected Q4 2014
 - : Optimistically, solution in place in 2017
 - : Realistically, solution in place in 2019
 - : Pessimistically, solution in place early 2020s
- PPA market has hit a wall now, companies can't afford a 'wait-and-see' approach.