



# Auction Design: Expert Group Workshop

19 February 2013



# Agenda

Agenda	Time
Introduction, Objectives	10.30-10.50
Review of Penalty Regime Straw Man	10.50-11.30
Volume to contract & Role of Year Ahead Auction, Demand Curve, Role of CONE	11.30-12.10
Lunch break	12.10-12.30
“Lunch ‘n’ Learn” – REMIT and competition policy	12.30-1.15
Timeline, Process, Appeals Process	1.15-1.45
Voluntary v Mandatory Participation - <ul style="list-style-type: none"> <li>Derating/ Prequal process</li> <li>Choice of participation</li> <li>Price makers/takers, LT contracts, Price smoothing mechanism</li> </ul>	1.45 – 3.45
Conclusions / Next Steps	3.45-4.00



Department  
of Energy &  
Climate Change

# Capacity Market; Penalty Regime

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## Feedback from last workshop

- Design of the Payment Recovery model would give rise to individual risk, potentially impairing development of secondary trading and distorting the merit order
- Secondary trading is an essential enabler of an efficient mechanism
- Mechanism design should facilitate and not impede such trading
- Use of a trading platform could facilitate a liquid secondary market
- Liability cap is desirable although this could re-introduce non-standard risk
- Concerns over portfolio level trading and impact on liquidity
- Support for VoLL minus cash out approach



## Summary of VoLL minus cash out approach

- Penalties/incentives applied for delivery, relative to capacity obligation, in periods of system stress\* (\*settlement periods with demand control lasting > 15mins)
- Delivery performance assessed on portfolio basis
- Providers with net under-delivery will pay a penalty
- Providers with net over-delivery will be paid a negative penalty
- VoLL is an administratively set parameter; review frequency to be determined
- Penalty/incentives calculated at system-wide rate of

$$\text{Penalty Rate } PR_j \text{ (£/MWh)} = z \times (\text{VoLL} - CO_j)$$

- 'j' is relevant settlement period and 'z' is a multiplier set at [100%]



## Settlement period calculation

- Penalty/incentive calculation for each settlement period defined as a stress period is:

$$\text{Settlement Period Penalty } SPP_{ij} = PR_j \times (ALFCO_{ij} - E_{ij}) \times h_j \text{ £}$$

- Where 'ALFCO' is the Adjusted Load Following Capacity Obligation and 'E<sub>ij</sub>' is the average power delivered by unit 'i' in MW.
- 'h' is either 0.5, where there is a stress event, or zero where there is not
- The portfolio penalty (i.e. sum of all units across all settlement periods) is:

$$\text{Portfolio Penalty } PP = \sum_{i=1}^{\text{Units in Portfolio}} SPP_{ij}$$



## Capping penalty exposure

- Provider's total liability would be capped through an Annual Portfolio Cap (APC) of:

$$APC = 2 * CONE \sum_{i=1}^{\text{Units in Portfolio}} BMU(i) Capacity$$

- Soft Portfolio Cap (SPC), applied annually, based around lower of APC or theoretical maximum portfolio penalty

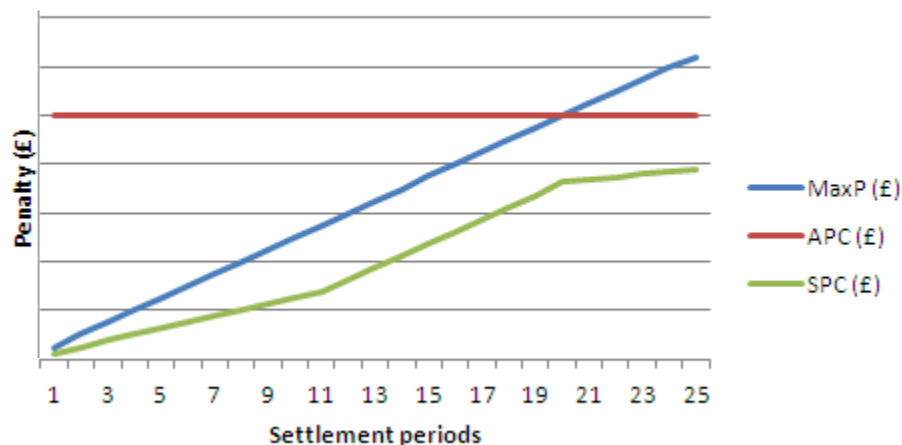
$$SPC = \left( \frac{PP}{MaxP} \right) Min( Max P, APC )$$

- Where 'Max P' is the portfolio penalty (PP) with 'Ei' set to zero

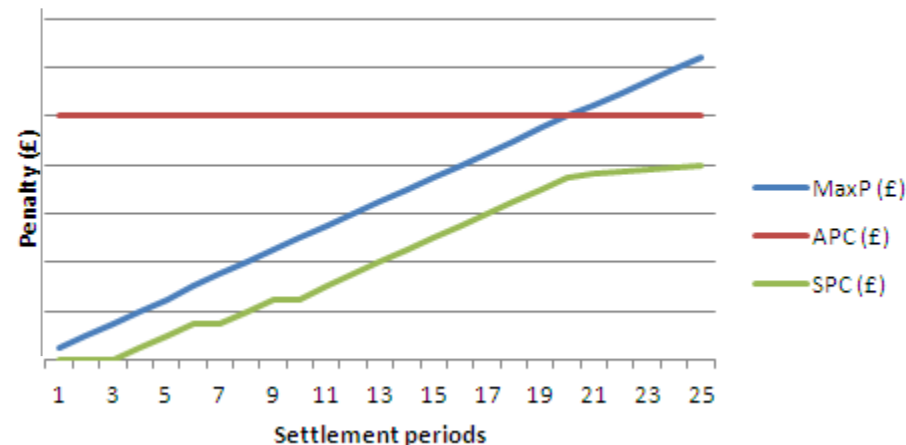


# Examples of hard and soft penalty cap interaction

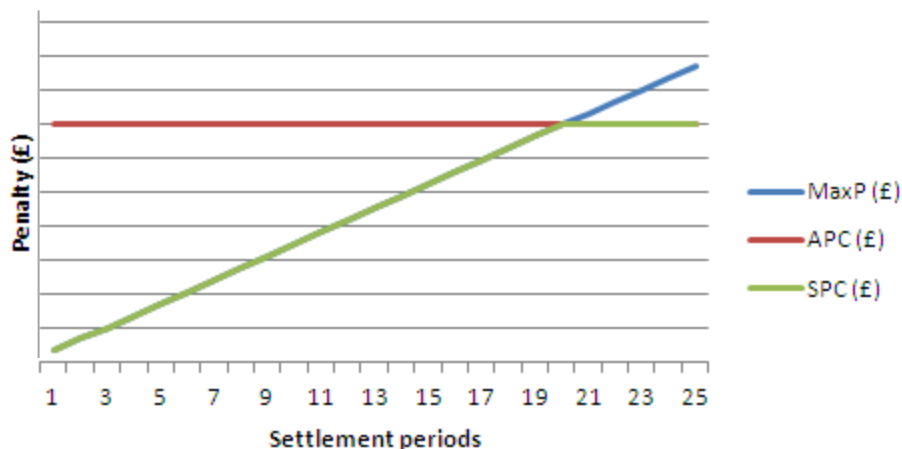
**BMU 1**



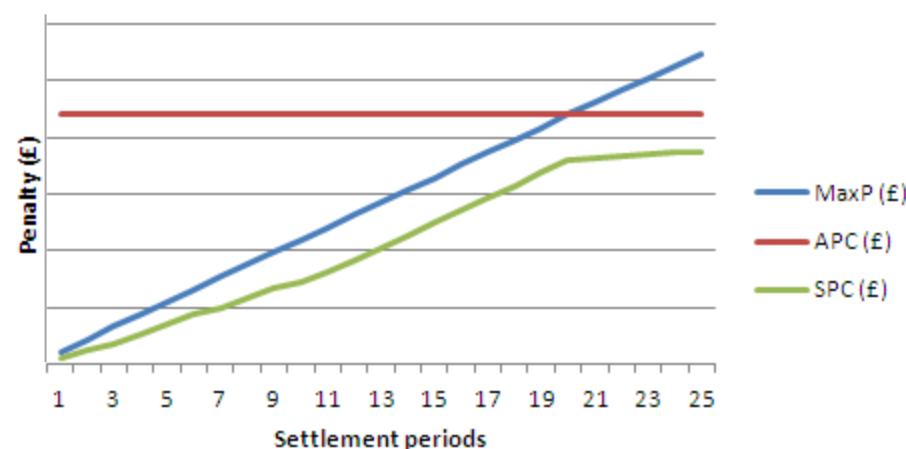
**BMU 2**



**BMU 3**



**Portfolio (BMUs 1, 2 & 3)**







## Adjustment to design of Performance Related penalty regime

- Key concern was non-standardisation of risk across providers, given direct links between revenue, cap and penalties, & impact on secondary trading potential
- Propose the risk could be standardised by:
  - Basing penalties for all providers on the delivery year's T-4 auction smoothed price & not on their specific auction's clearing price (i.e. removing vintage penalty legacies)
  - Long-term agreements are annually re-specified to pay providers the higher of their clearing price or the current delivery year's clearing price; avoids discrepancy whereby penalty cap is set relatively low for new providers
- Would retain existing features of the model – price/modelled number stress events, 2 x revenue cap, VoLL minus cash out adjustor (with administratively set VoLL)



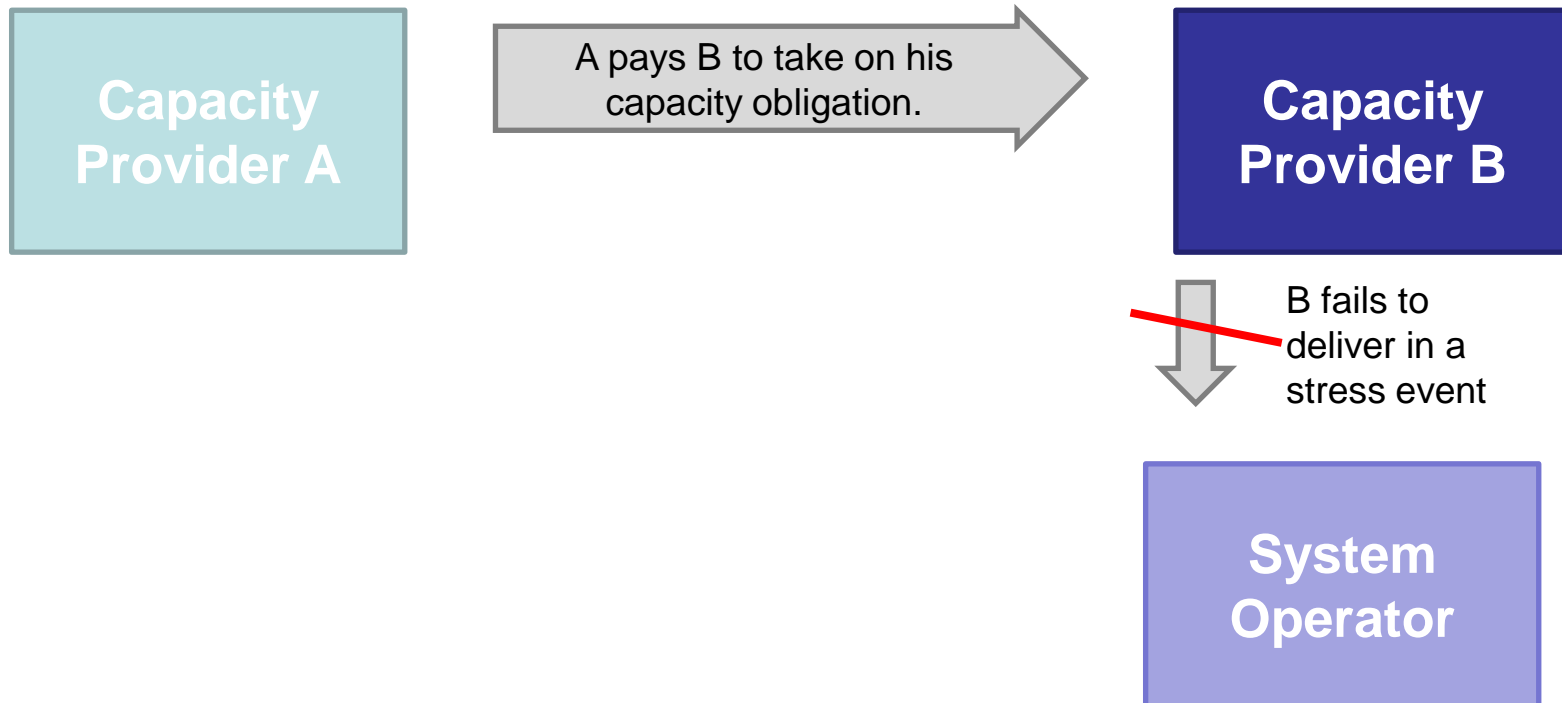
# Secondary Trading of Capacity Obligations

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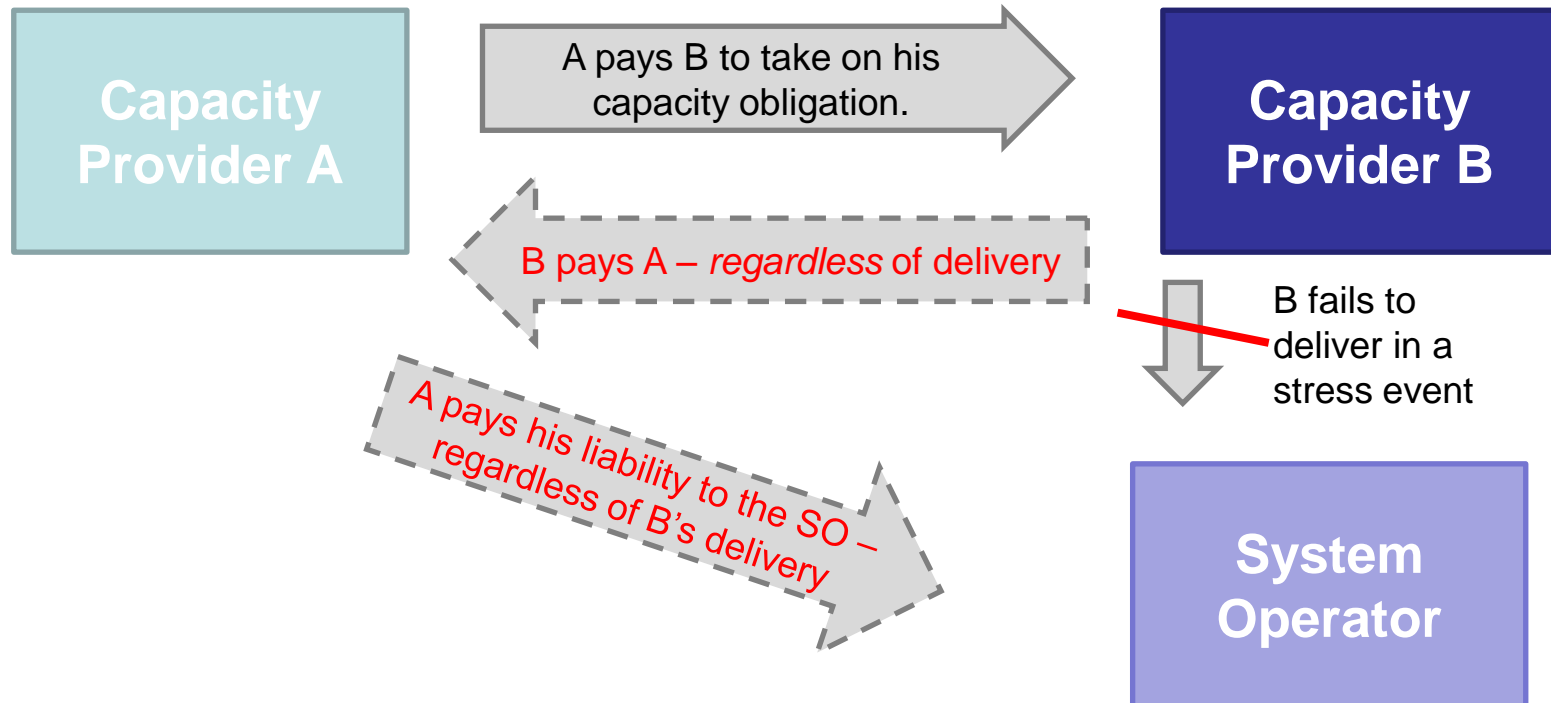
## Introduction



- Key questions for secondary trading:
  - Who pays what penalties – given liabilities may differ due to cap?
  - What is the appropriate involvement for Govt / the SO?



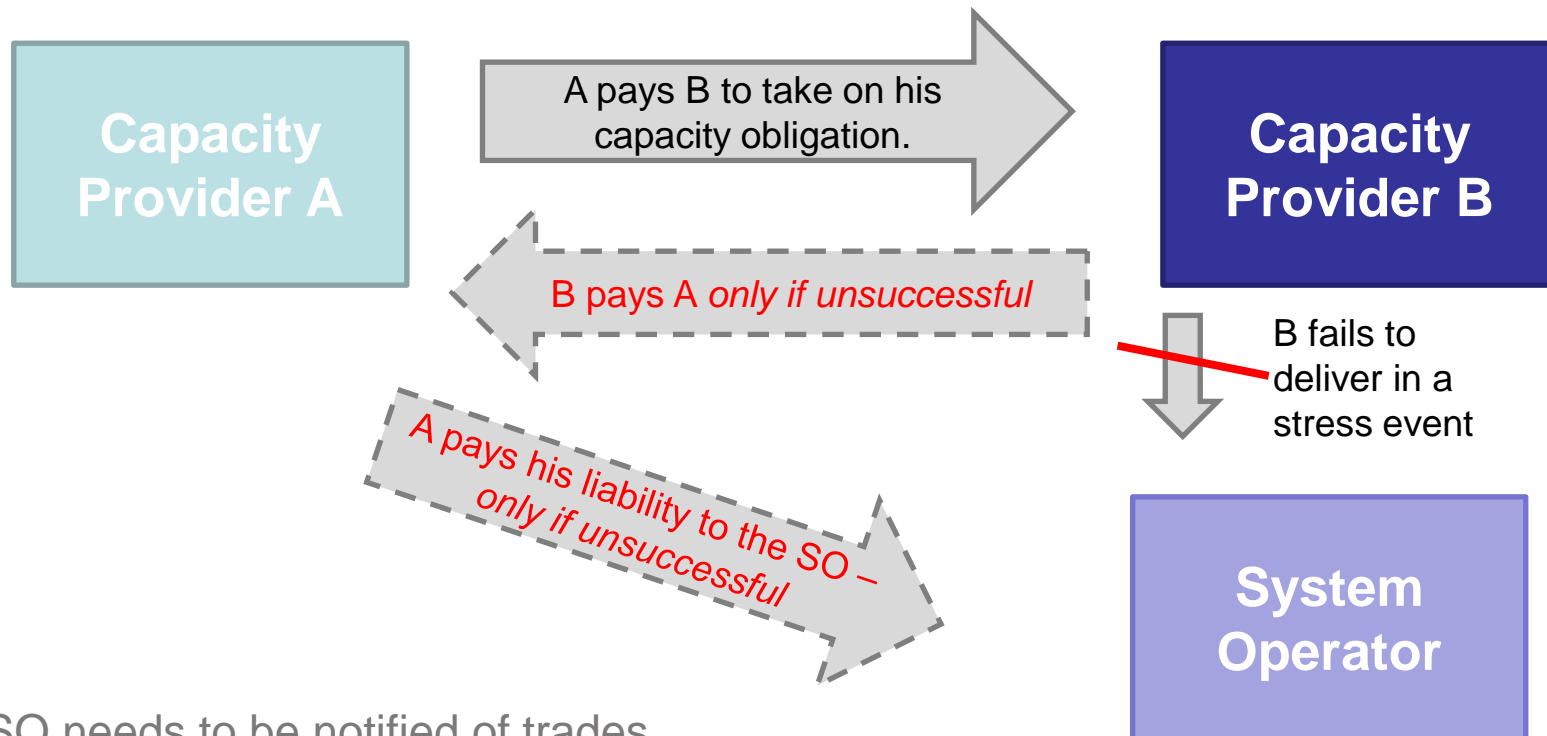
## Financial trading



- SO does not need to be notified of trades
- B pays A and A pays SO regardless of whether SO delivered
- **Payments to SO are according to each party's liability**
- Payments between A and B are according to financial agreement
- Possible product definition: *CM penalty in period for a given market share*



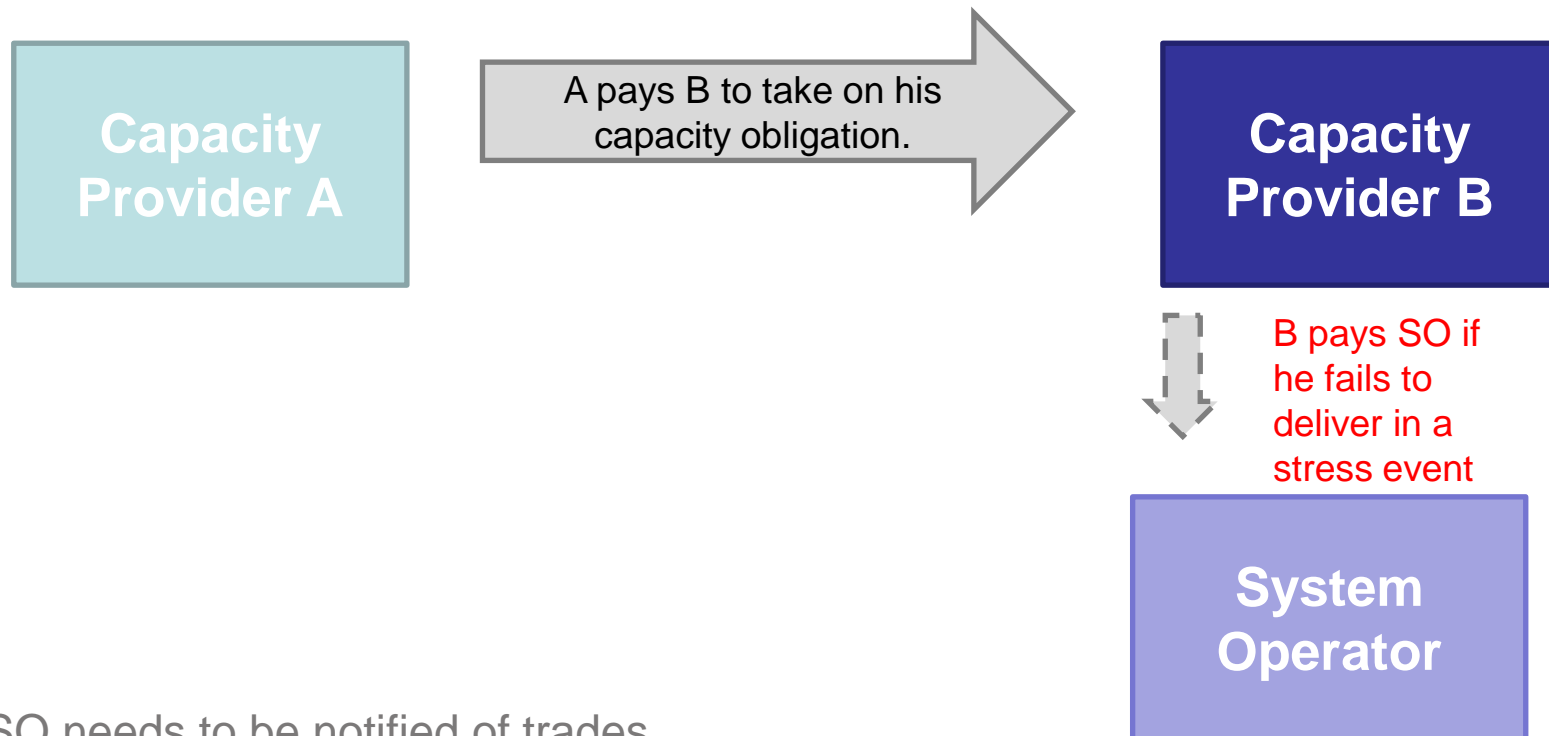
## Hybrid trading in delivery year



- SO needs to be notified of trades
- A only penalised and B only pays A if there is failure to deliver
- **Payments to SO are according to each party's liability – but plant B paid able to earn plant A's incentives if B is further from his cap**
- Payments between A and B are according to financial agreement



## Physical trading in delivery year

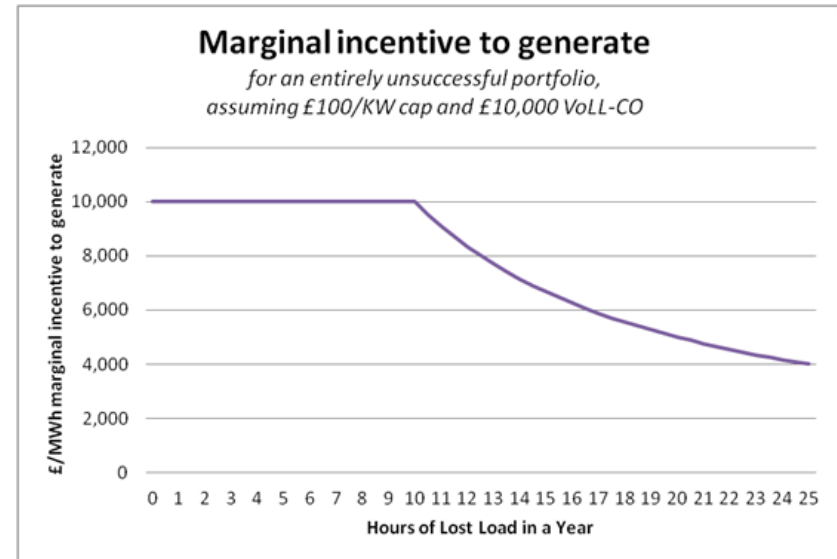


- SO needs to be notified of trades
- A no longer holds any liabilities
- **B is directly liable – but at A's penalty rate – which is not known until the end of the year and which depends on A's performance**



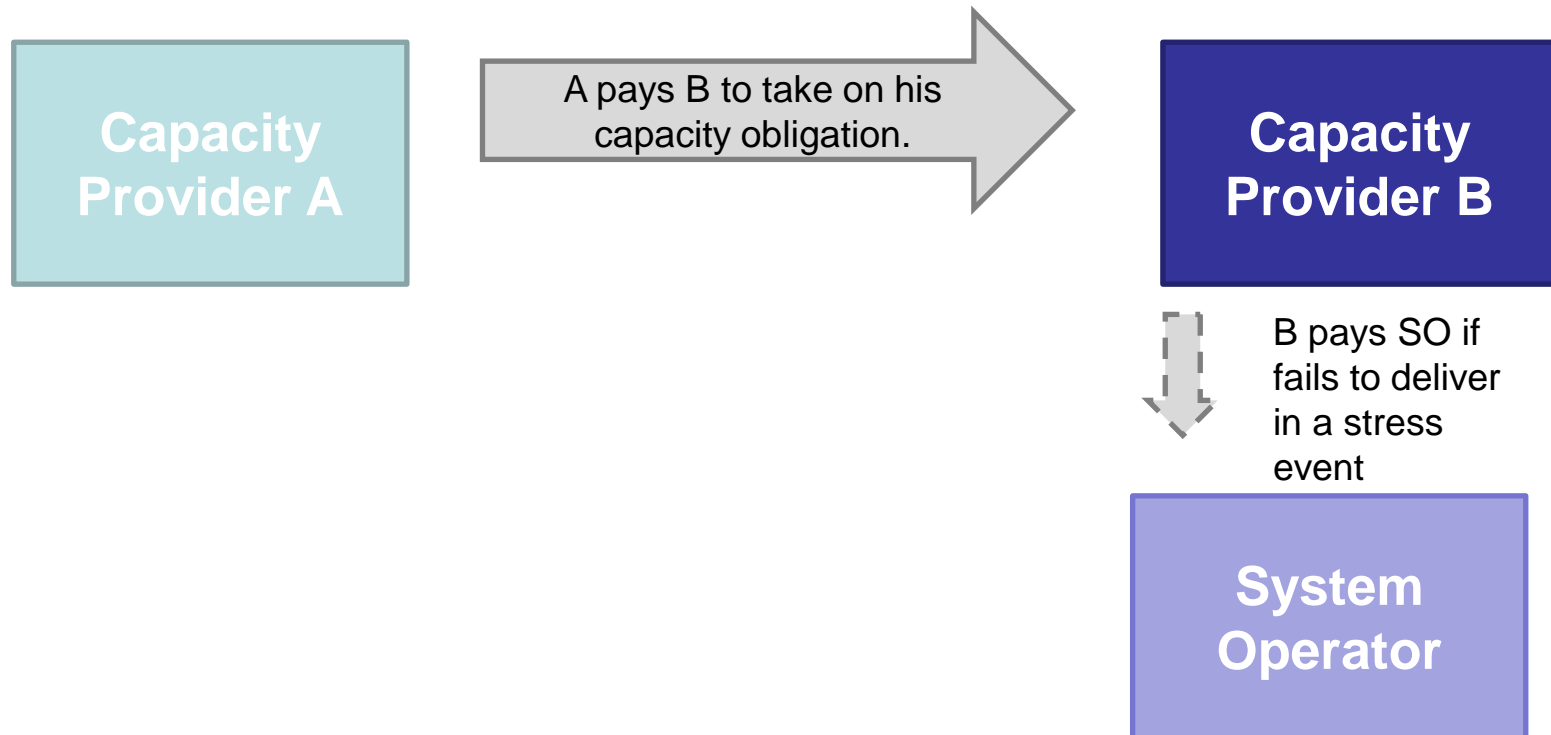
## What rate to penalise plant B?

- Under Physical and Hybrid trading, liability must follow with capacity traded – otherwise parties can pass obligations to a plant near its cap
- B's liability is equivalent to A's marginal incentive to generate at the end of the year
- But A's liability can only be determined ex-post and is a function of A's subsequent performance in the year
- Should trading be on a portfolio basis?
  - Trading on a BMU basis is not a meaningful concept if performance is assessed on a portfolio basis and plant paid for overdelivery
  - But if there is a spot check, how can SO know who to check if you have traded with a whole portfolio?





## Physical trading *prior to delivery year*

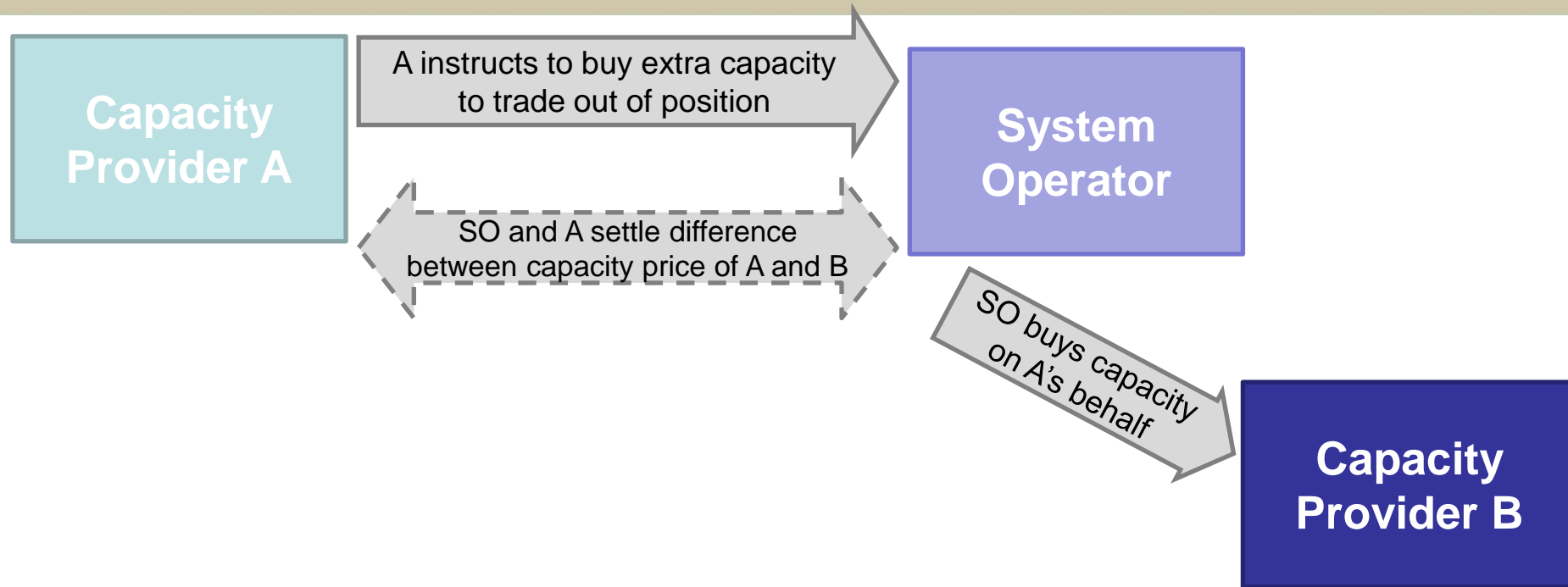


- If trading occurs prior to delivery year, should obligation follow B's liability?
  - Gaming risk: everyone sells obligation onto a single portfolio to mitigate risk
  - Therefore requires intervention to prevent firms "overselling capacity"





## Two Sided Auction



- SO can operate two-sided auction and buy on behalf of providers wishing to trade out – making Year Ahead Auction an extension of Secondary Market
- Liabilities then go according to Plant B (unlike financial trading)
- Prequalification process provides check to ensure appropriate trading
- Who might want to trade out of their position for a whole year?
  - Plant wishing to close
  - Plant wishing to convert to biomass



## Which form of trading is most likely?

- Financial trading appears the most likely:
  - Can be a standard product – even if the volume bought differs according to how near a plant is to its cap
- Physical and Hybrid trading within delivery year is less likely:
  - Parties need to agree penalty terms bilaterally
  - Under physical trading, parties do not know liability until end of year – and liability is not just dependent on your own performance
- Physical trading *prior to delivery year* is more likely:
  - No difference in proximity to cap at that point – so obligation can follow B's liability
  - But there needs to be checks to avoid gaming risk that small portfolio takes on more obligations than he can hold



## Questions for discussion

- Is physical/hybrid trading useful within the delivery year for the market? (i.e. given administrative complexity, should either be allowed?)
- Is physical trading prior to delivery year useful? How can gaming risks be mitigated?
- Should government provide a platform for financial trading?



# Capacity to contract & Role of Year Ahead Auction, Demand Curve, Role of CONE



## Reliability standard and the demand curve – deciding how much to buy

- Reliability standard set by Ministers in 2013 EMR Delivery Plan – e.g. 5 hours LOLE
- This standard is set with reference to an assumed cost of capacity
- EMR delivery plan will also set out the methodology for producing a demand curve
- Each year, Ministerial preferences are translated into an amount of capacity needed and a target amount set. This will be done by the SO through the EMR delivery plan process.
- The target amount of capacity will be expressed through a demand curve in order to trade off the optimum amount of capacity against the cost to consumers.
- Ministers will set the final demand curve to be used in the auction.



## Setting the target amount of capacity in each auction

**Set total  
capacity  
needed**

Total predicted  
demand



Non-CM  
capacity



Total capacity  
needed in CM

**Set target  
for T-4**

Total capacity  
needed in CM



Predicted cost  
effective DSR



Target amount  
in T-4 auction

**Set target  
for T-1**

UPDATED  
total predicted  
demand



Capacity  
secured in T-4  
auction



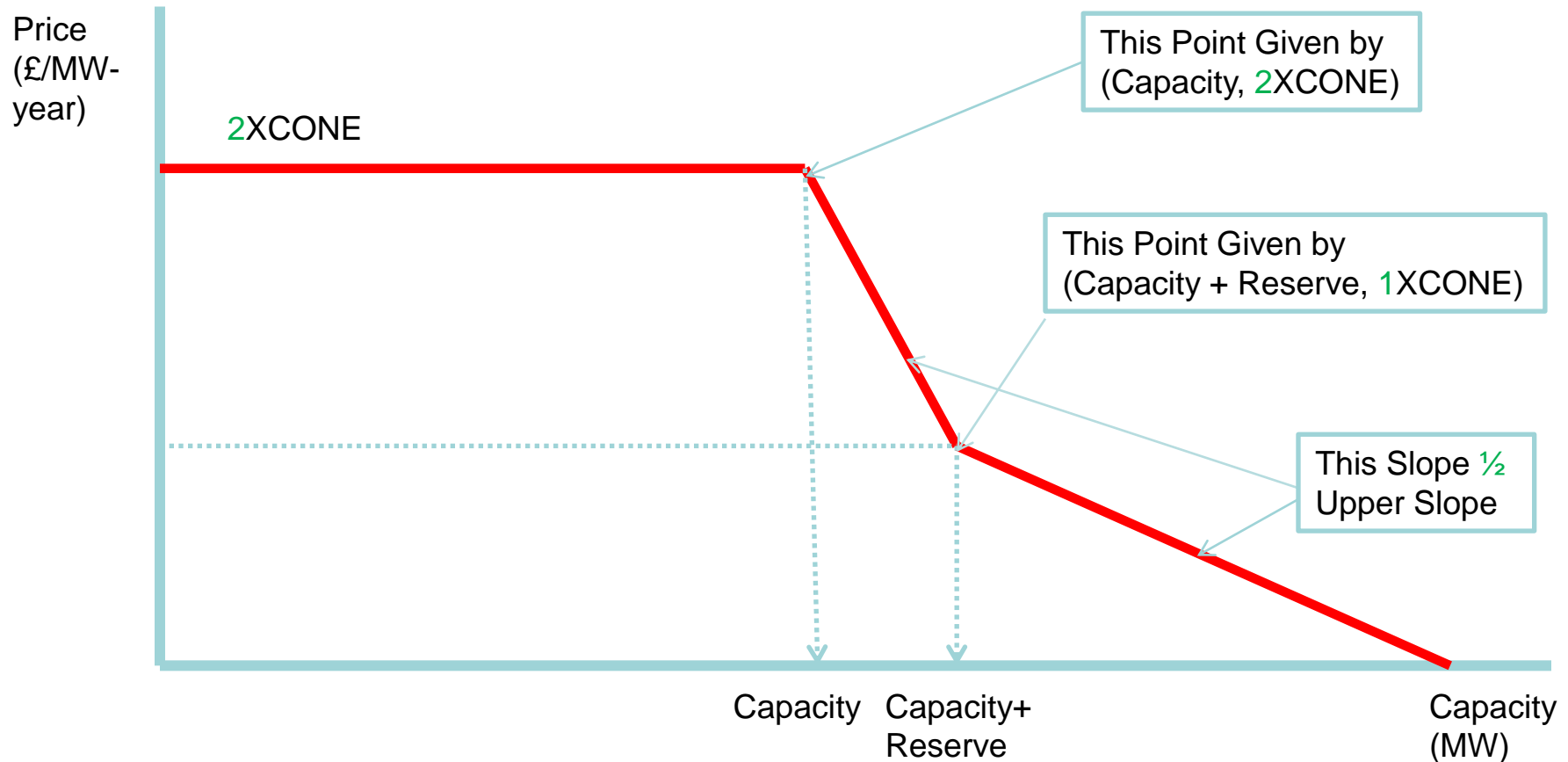
Non-CM  
capacity



Target amount  
in T-1 auction



## Setting the demand curve and the role of the Cost of New Entry (ILLUSTRATIVE)

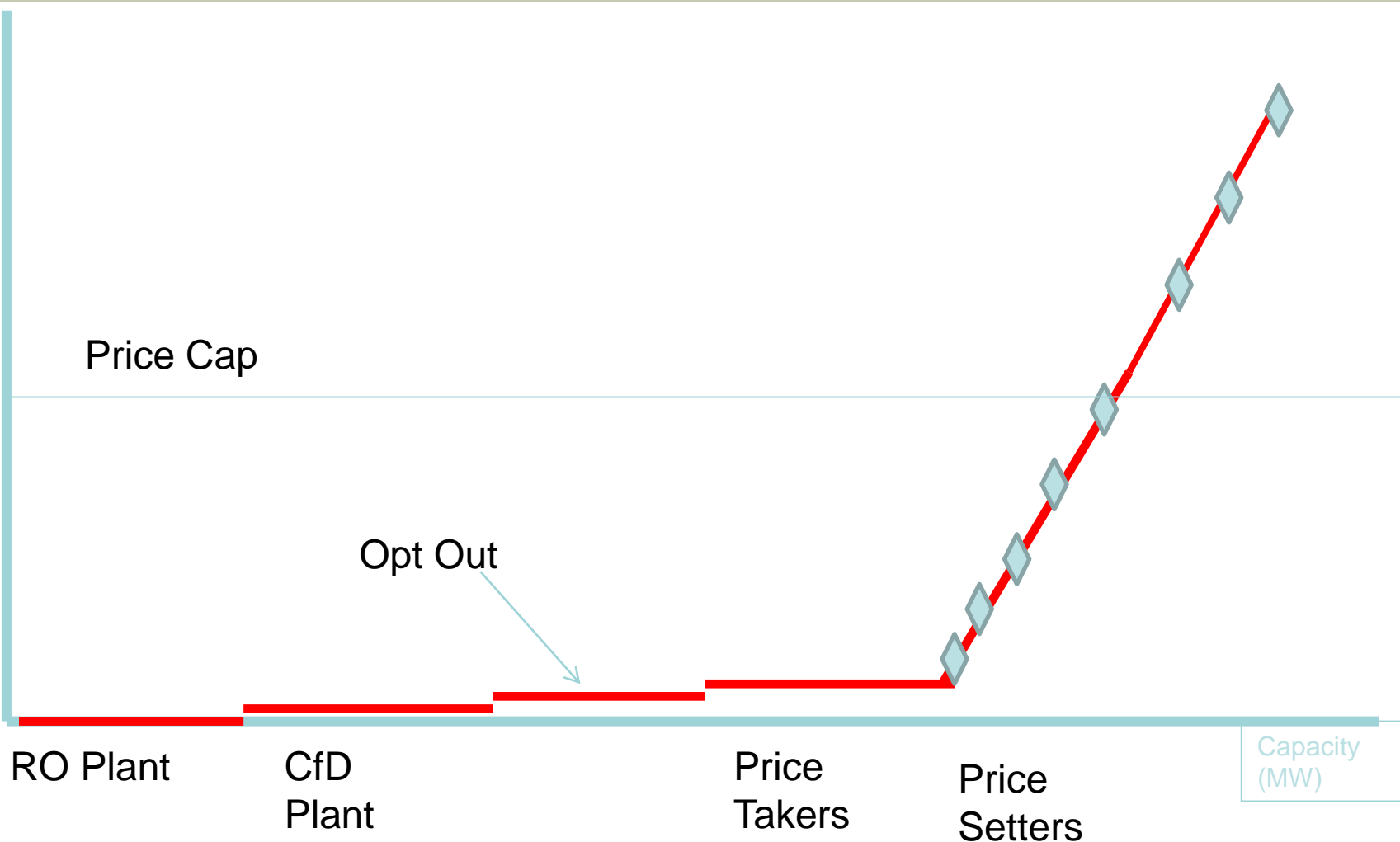


The demand curve is published in advance of the auction



# Supply Curve

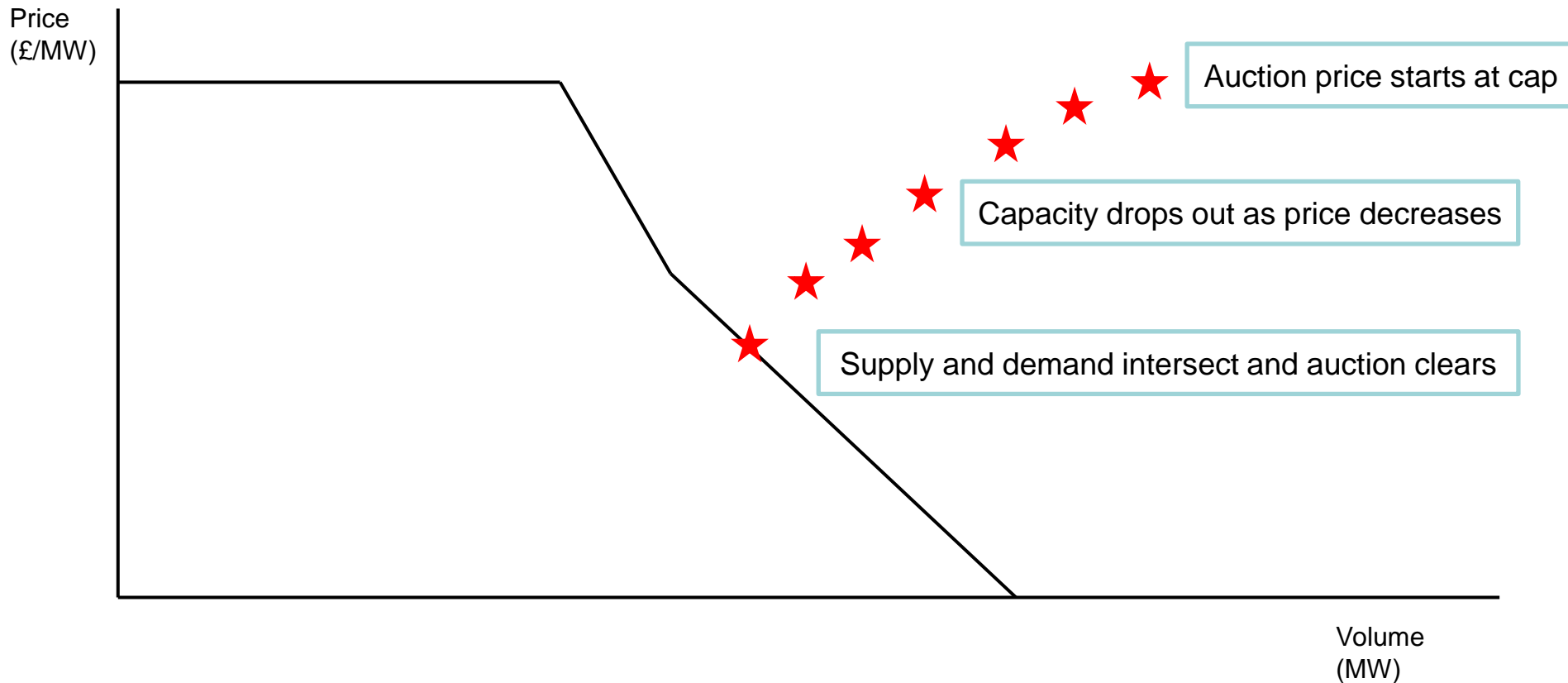
Price  
(£/MW  
-year)







## Applying the demand curve in the auction





# Capacity Market; de-rating/pre-qualification

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## De-rating capacity

- De-rating figures for each BM unit will be set administratively by the SO in the pre-qualification stage. Why is this?
  - Mitigate market power – concerned about capacity being withheld to influence clearing price
  - Incentives for de-rating – penalty regime may not incentivise true disclosure
  - Procuring the right level – de-rating across fleet will make it easier to ensure the right total level of capacity is contracted

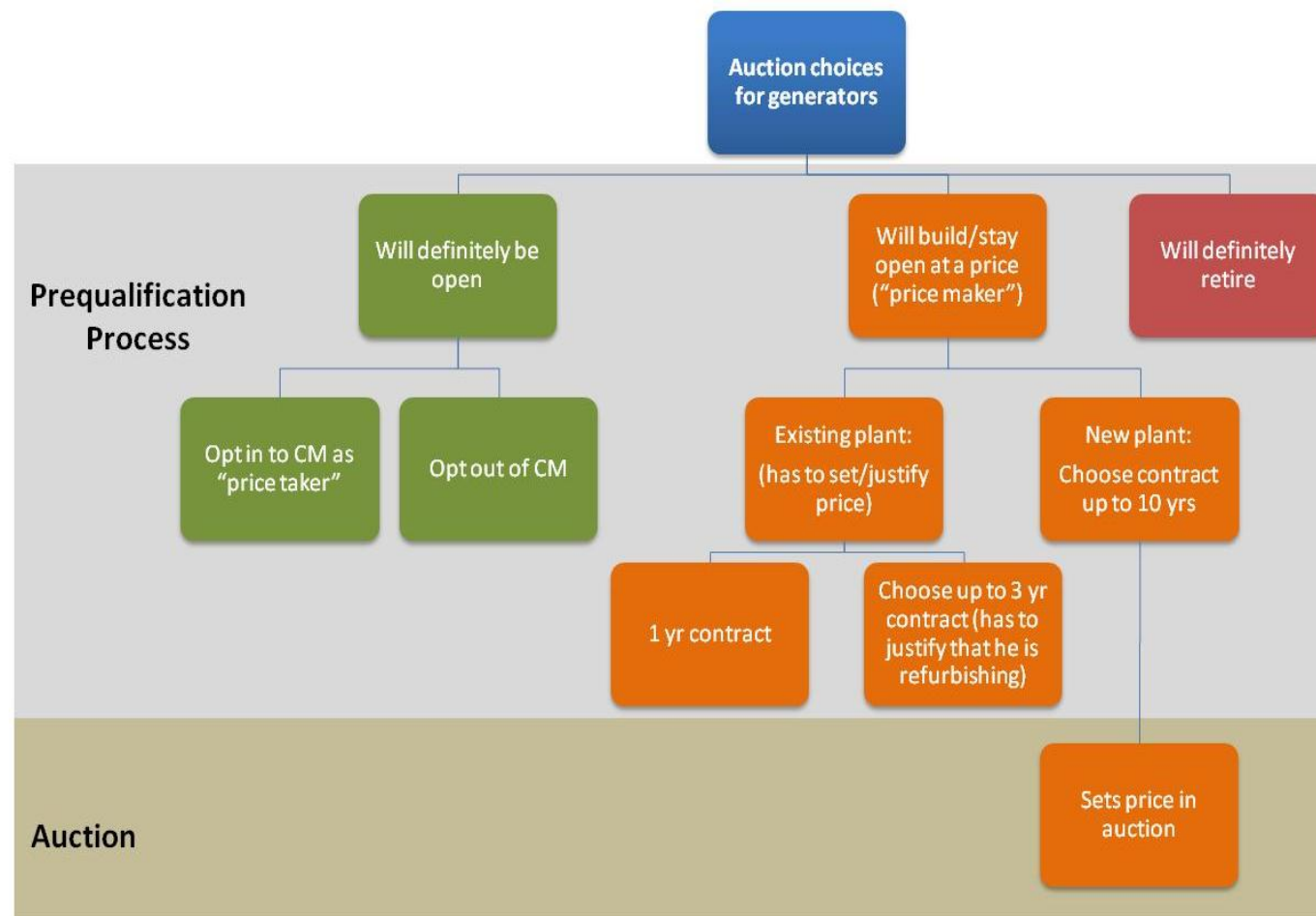


## Pre-qualification process

- Mandatory stage for licensed, eligible generation
- Purpose is to confirm eligibility status of providers and reduce complications for running an efficient price-based auction
- BM Unit level focus
- Register whether unit will
  - Definitely be open
  - Build or stay open at a price
  - Retire at any price



# Pre-qualification registration





## Pre-qualification requirements

- Existing ‘price taking’ plant required to demonstrate valid TEC and [pass financial check]
- Existing ‘price making’ plant required to submit Board Certificate, Board approved business plan and desired term length [up to three years] – in addition to above
- New plant required to submit valid Development Control Order, construction milestones, plant description and desired term length [up to ten years] – in addition to financial check
- Additional administrative requirements –
  - Grid Code compliance,
  - Valid connection agreement for delivery year
  - CfD/RO status of bid capacity



# Participation in auction

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## Competition in the Capacity Auction

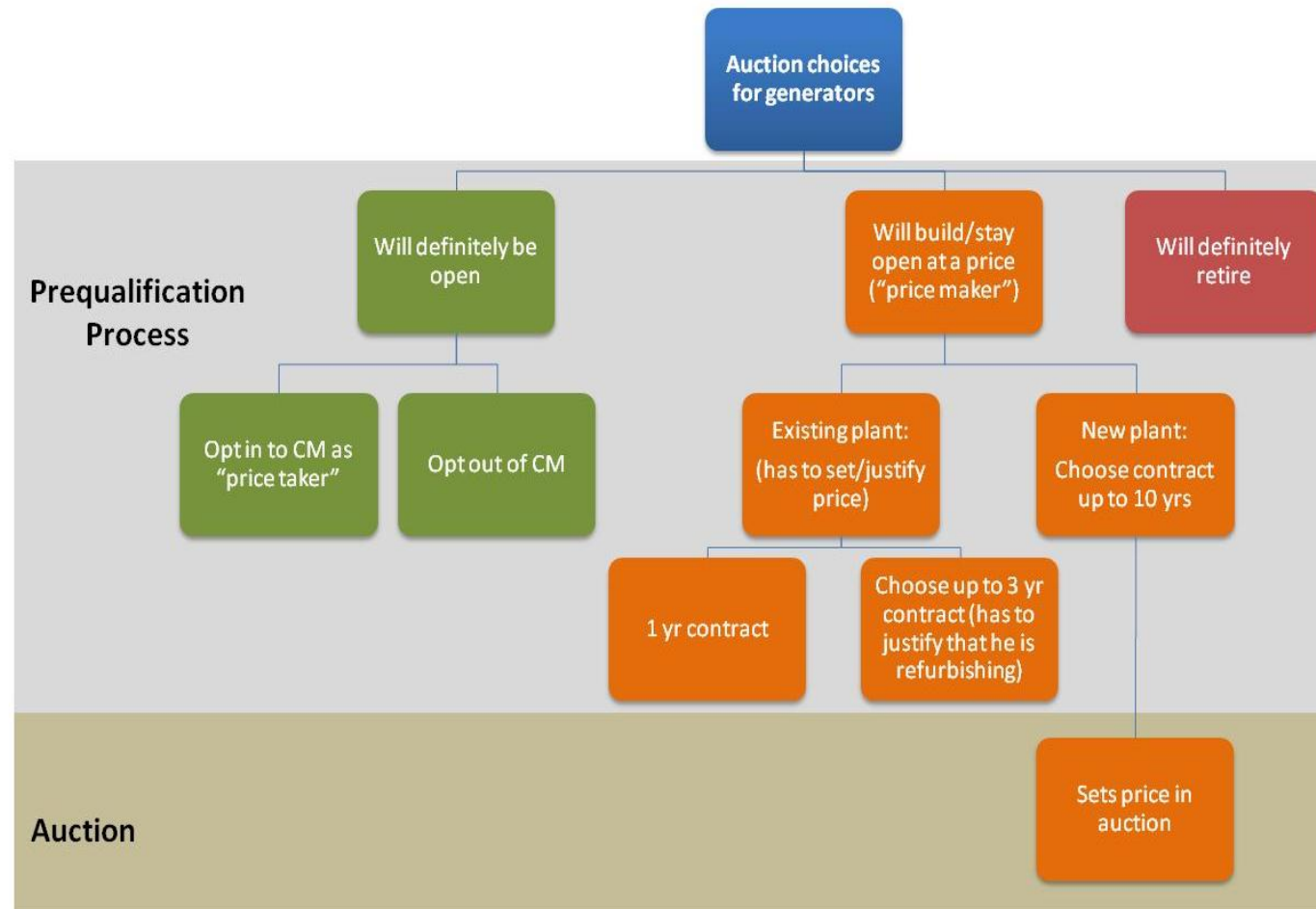
- It is recognised that there are potential gaming risks around running a capacity auction:
  - Parties may withhold capacity to drive up the price
  - Parties may offer capacity at a price that doesn't reflect its going forward costs in order to drive up the clearing price
- We have proposed a range of measures to mitigate these risks:
  - Demand curve
  - Portfolio-level cap on liabilities
  - Mandating participation in prequalification process
  - Adjusting volume to contract for plant that stays outside of auction
  - Forcing incumbents to 'qualify' as price-makers
  - Investigating plant that are unsuccessful in auction but stay open





## Mandating Participation

- Participation in the auction will not be mandatory – parties can “opt out”
- But licensed, eligible generators (and cofiring plants) have to participate in *prequalification*





## Opting Out

- Parties that opt out will be assumed to be available in the delivery year – and the volume of capacity contracted will be accordingly reduced
  - This mitigates gaming risk from plant participating in the auction
- Plant that opts out will be eligible to opt back in to the auction in subsequent delivery years
- Plant that opts out will not be eligible for payment for overdelivery
  - Possible exception for DSR that has prequalified but does not wish to hold obligations



## Price Makers and Takers

- Existing plant wishing to be price makers will have to present a Board-approved business case explaining:
  - how they will bid into the auction
  - why that price is justified
- This information goes straight to Ofgem and can be used as the basis for an investigation
- New plant and DSR will not have to announce their price prior to the auction
- **Questions for discussion:**
  - Why might plants need to be price makers? Is it just due to need for refurbishment (i.e. Capex)?
  - If plants need revenue just to cover Opex, is this better dealt with through allowing price takers to offer up to an administratively set floor? If so, how should it be calculated?



## Long term contracts

- New plant is automatically eligible for long term contracts – up to 10 yrs
- Existing plant is eligible for contracts up to 3 yrs, if they demonstrate they are investing material amounts in the capital of the plant to improve capacity / efficiency / emissions.
- Eligibility for a long term contract for existing plant will be assessed by the SO as part of the prequalification process
- Both new and existing have to nominate their preferred contract length prior to the auction
- New and existing are treated equally in the auction – unless there is a tie, in which case the shorter contract wins
- **Question for discussion:** what are appropriate criteria for measuring whether an existing plant should be eligible for a long term contract?



## Price smoothing mechanism

- Price takers will get paid a simple average of the three most recent auction clearing prices
- This gives price takers the same expected value as if they receive the clearing price each year, but reduces the volatility of payment levels
- It also reduces incentives for existing plant to seek to be price makers in the auction (as they will know there is a minimum level of payment guaranteed)



## Incentives for plant that fail in the auction

- Existing plant that enters auction as price-maker does so on the basis he should be setting offer price at his true “going forward” cost
- If a plant is unsuccessful then doesn’t close, it should be automatically investigated for abuse of market power
- Potential need for stronger measure to mitigate gaming risk:
  - Force price-maker plants that are unsuccessful in auction to then close
- **Question for discussion: Is there a good reason why existing plants that were unsuccessful in the auction shouldn’t be expected to close?**



## Relationship between auction design and penalty regime

- Current penalty regime has a penalty that is unrelated to size of payment, and only pays plant that opt in to the mechanism
- Price maker/taker distinction means price-takers may have an incentive to opt out in years where the expected clearing price is low – to avoid holding a potentially significant liability
- If part of the market opts out, this creates potential distortions to dispatch
- There are three potential mitigations:

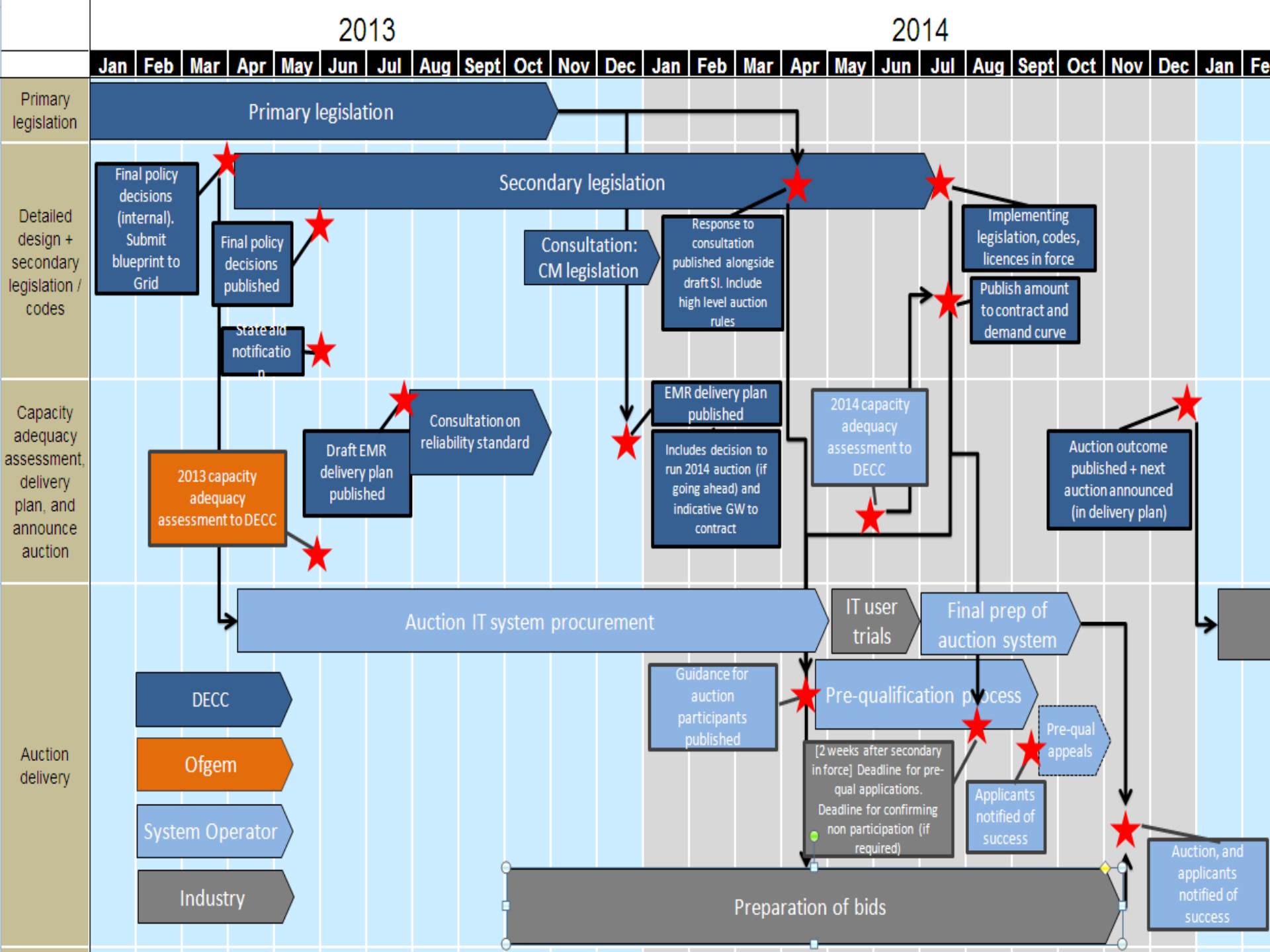
- 1. Retain VoLL-CO penalty; allow all plant to be price makers**  
(mitigates risk of plant choosing to opt out)
- 2. Retain VoLL-CO penalty; pay opt out plant for overdelivery**  
(mitigates dispatch distortions if plant opts out)
- 3. Return to PRDE penalty; link everyone's penalty to T-4 smoothed price;** ensures risk of holding obligations is proportionate to revenue, ensures almost all plant wishes to opt in and then faces same incentives



## Auction timing and process

- Timeline for 2014 auction is tight
- We have immovable dependencies:
  - Royal Assent for the Energy Bill (expected late 2013)
  - Secondary legislation (July 2014)







## Key stages for participants

- Pre qualification:
  - Bidders would have around 4 months from publication of detailed rules to close of pre-qualification. **Is this enough?**
- Appeals:
  - Pre-qualification as mechanistic as possible
  - Parties will have right of appeal – e.g. if judged not to have met criteria, or if differences in derating
  - **Do you have views on the appeals process?**
- Auction:
  - Bidders would have around 4 months from publication of the demand curve to the auction. **Is this enough?**



## Issues for discussion

- Are there aspects of the timeline which can be compressed?
- Are there aspects of the timeline which are unmanageably tight?