

20.09.2023



FASS - Proposals for enduring arrangements and transition

DotEcon / Afry Industry
Workshop



Agenda

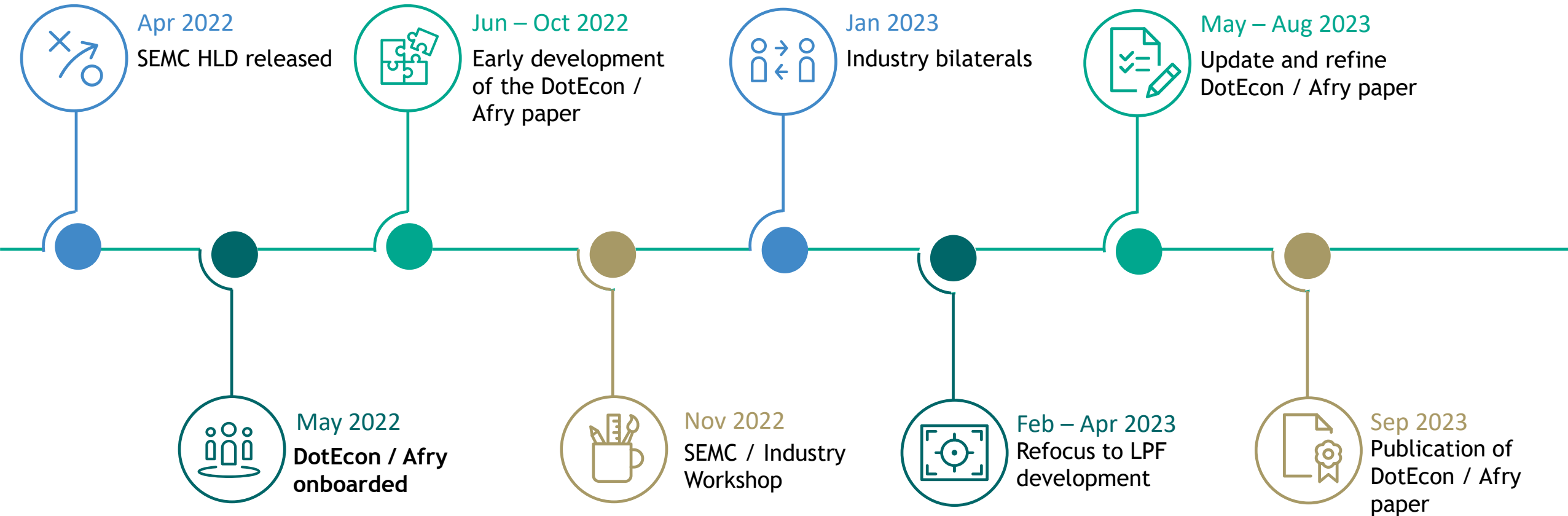
- Introduction -10 mins
- DotEcon Presentation 10.10 - 11.40 am
- Break - 10 mins
- DotEcon Presentation cont'd 11.50 - 12.40
- Q&A 12.40 - 13.00



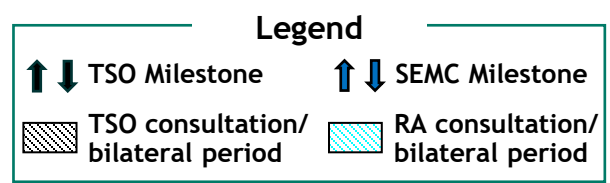
Development of DotEcon / Afry Proposals



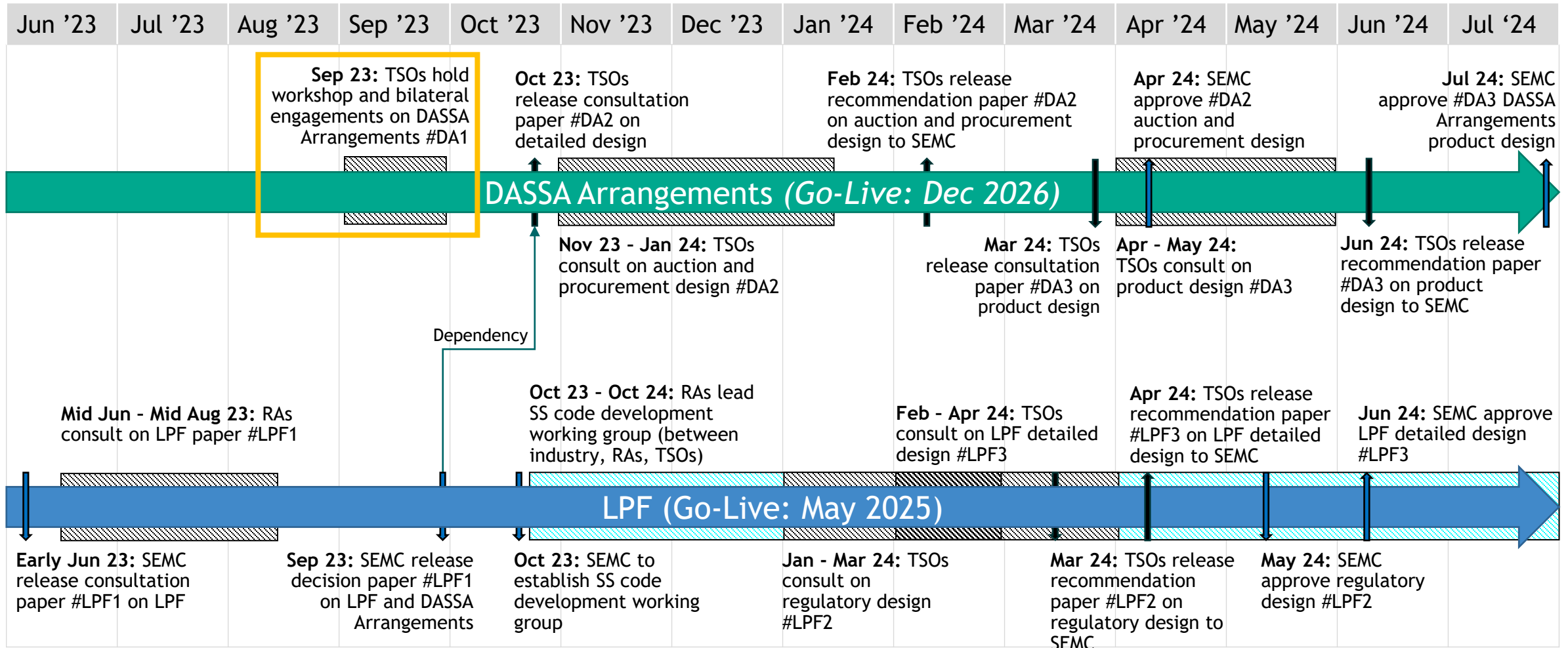
Below shows the history of the development of the DotEcon / Afry recommendation paper on 'FASS (Future Arrangements of System Services) - Proposals for enduring arrangements and transition'.



HL roadmap: Interim and Enduring Arrangements



The below high-level roadmap sets out the approach for progressing the auction design of both Layered Procurement Framework (LPF) and Day Ahead System Services Auction (DASSA) Arrangements, for FASS concurrently. While these are two separate designs, they are closely related and must be progressed the parallel to establish System Service arrangements prior to the expiry of DS3 Arrangements.



Please note, current timelines for both LPF and DASSA Arrangements have been condensed as much as possible. Proposed roadmap is contingent on clarity of scope by way of September 2023 SEMC decision.

Next Steps

Following today's workshop on 'FASS - Proposals for enduring arrangements and transition', the TSOs welcome bilateral meetings with industry, at which DotEcon/Afry will be present, to discuss the proposals in the paper.

- Please direct any queries to SOEF@Eirgrid.com or SOEF@soni.ltd.uk



Future Arrangements for System Services (FASS)

Proposals for enduring arrangements and
transition

Stakeholder workshop
20 September 2023

Agenda

1. Introduction
2. Overview of proposed arrangements
3. The Day Ahead System Services Auction (DASSA)
4. The Final Assignment Mechanism (FAM)
5. Extensions
6. Transition arrangements
7. Long-term contracts



Future Arrangements for System Services (FASS)

Introduction

Aims of the design

- Our proposals follow the **High-Level Design** (HLD) set out by SEM-C in April 2022
- Future arrangements must ensure a **short-term market** for System Services, with prices set through a **competitive process**
- For this basic design we focus on **reserve services**, which have the complication of interacting significantly with energy provision ...
- ... but the framework should be general enough to **accommodate all System Services** eventually
- Enduring arrangements for other services, such as **reactive power**, will be discussed subsequently as extensions to this basic design

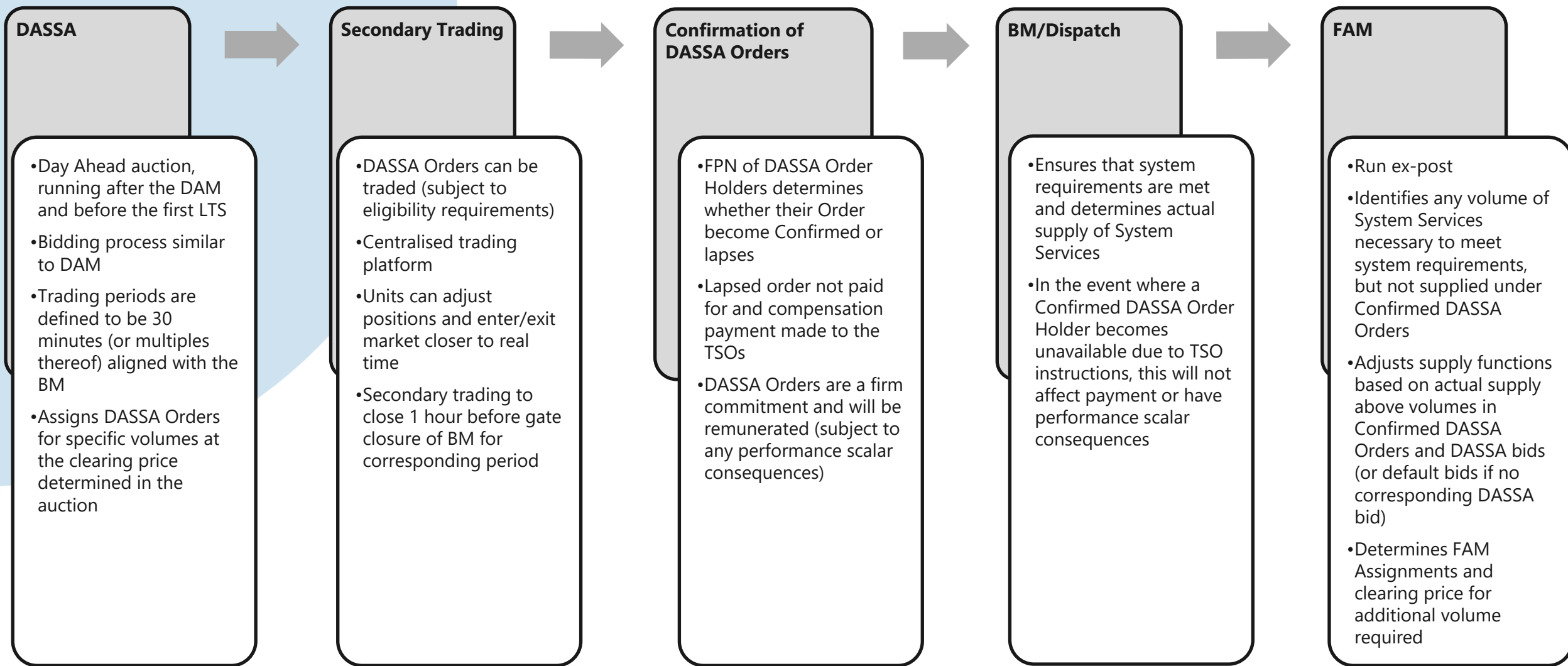
General assumptions

- Through, supply of system services is for **availability**, irrespective of whether unit is triggered/called
- **Volume requirements** are anticipated to remain broadly similar (as under the DS3 arrangements), though **product definition** may change
- Each **daily auction** would consist of a **single bidding round** (sealed bid) rather than a dynamic multi-round process
- Suppliers' **maximum service capability** will be set on registration and needs to be backed by grid connection and any other prerequisites
- The **performance scalar system** can continue to be used to incentivise operational performance from providers
- The **scheduling and dispatch processes** will continue to ensure a sufficient volume of System Services to meet requirements for system stability



Future Arrangements for System Services (FASS)

Overview of proposed arrangements



DASSA

- Day Ahead auction, running after the DAM and before the first LTS
- Bidding process similar to DAM
- Trading periods are defined to be 30 minutes (or multiples thereof) aligned with the BM
- Assigns DASSA Orders for specific volumes at the clearing price determined in the auction

Secondary Trading

- DASSA Orders can be traded (subject to eligibility requirements)
- Centralised trading platform
- Units can adjust positions and enter/exit market closer to real time
- Secondary trading to close 1 hour before gate closure of BM for corresponding period

Confirmation of DASSA Orders

- FPN of DASSA Order Holders determines whether their Order become Confirmed or lapses
- Lapsed order not paid for and compensation payment made to the TSOs
- DASSA Orders are a firm commitment and will be remunerated (subject to any performance scalar consequences)

BM/Dispatch

- Ensures that system requirements are met and determines actual supply of System Services
- In the event where a Confirmed DASSA Order Holder becomes unavailable due to TSO instructions, this will not affect payment or have performance scalar consequences

FAM

- Run ex-post
- Identifies any volume of System Services necessary to meet system requirements, but not supplied under Confirmed DASSA Orders
- Adjusts supply functions based on actual supply above volumes in Confirmed DASSA Orders and DASSA bids (or default bids if no corresponding DASSA bid)
- Determines FAM Assignments and clearing price for additional volume required



Future Arrangements for System Services (FASS)

The Day Ahead System Services Auction (DASSA)

The DASSA and associated payments

Auction structure

- Each auction is for **availability to deliver the service for each 30-minute period aligned with BM periods** and run a day ahead
- Suppliers can bid **price-quantity points** to indicate a **supply function** (similar to DAM)
- Assigns '**DASSA Orders**' at a clearing price for each service in each period

DASSA Orders and contractual payments

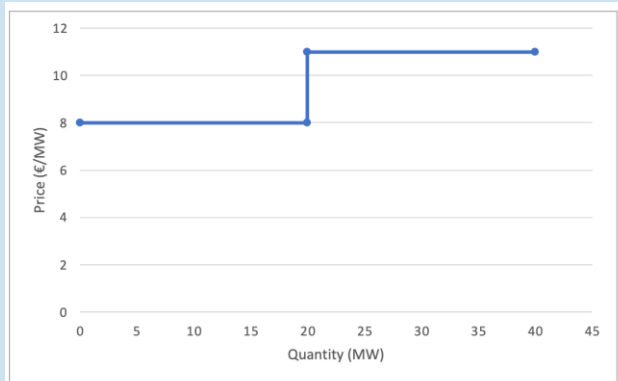
- A DASSA Order is a **commitment to enter the BM with a compatible FPN** for supplying the volume in the order
- DASSA Orders can be **traded** (subject to eligibility) up to a deadline (proposed 1 hour) before the gate closure of BM for the corresponding period
- Benefits in a **centralised trading platform** (TSOs need to know who holds DASSA orders anyway)
- When entering the BM, the FPN of the DASSA Order Holder determines whether the Order becomes **Confirmed** (and the holder remunerated, subject to performance) or lapses (holder liable to a compensation payment linked to DASSA clearing price)

Supply under a Confirmed DASSA Orders

- Supply under a Confirmed DASSA Order is subject to the performance scalar regimes (both availability and event performance), except where the holder is not available due to BM or Dispatch instructions from the TSOs

Bidding in the DASSA

Example bid

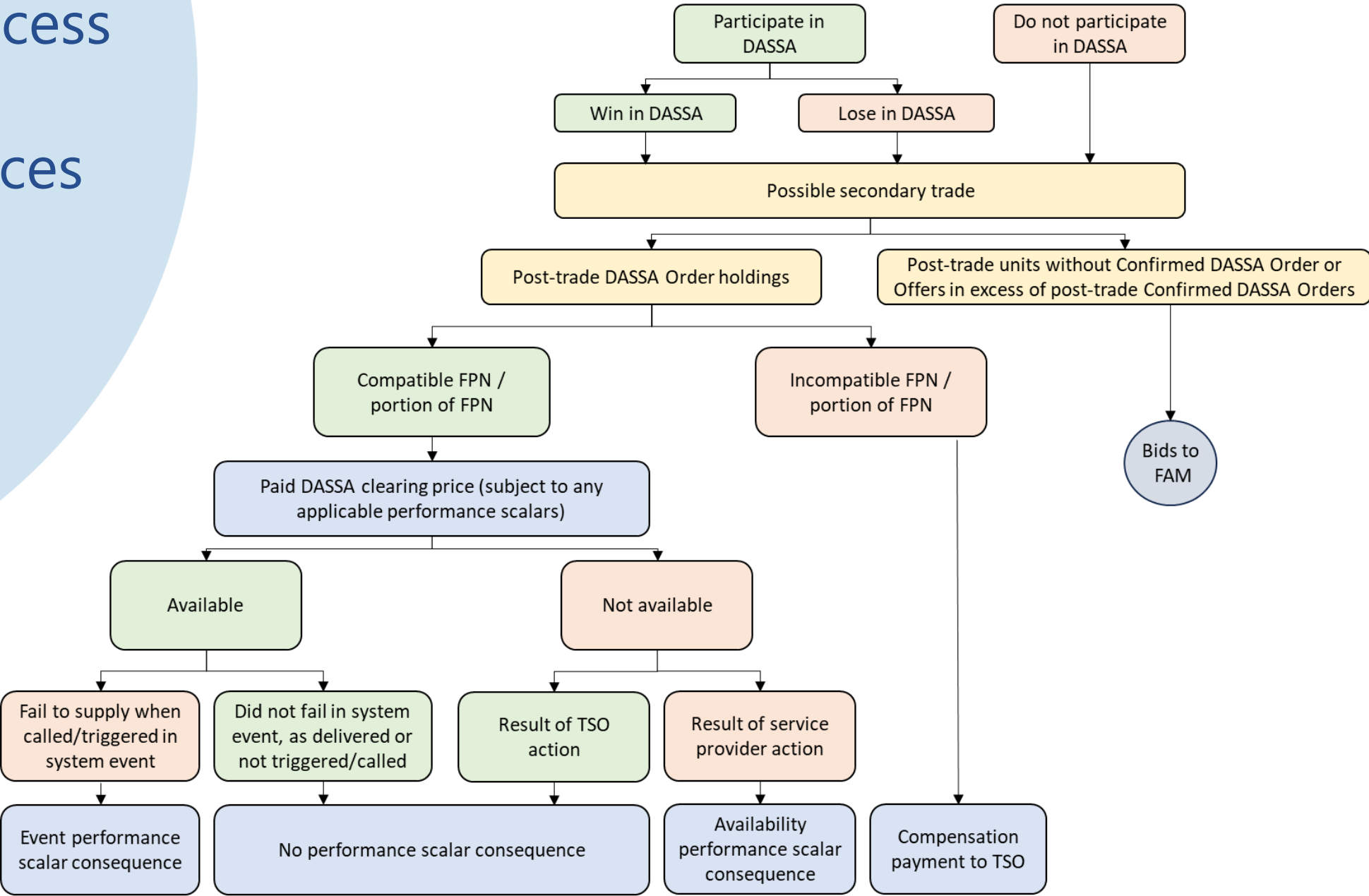


- Bids are made by **individual units**
- Bids for **individual products** (specific System Service and time period)
- **Bids remain valid after the DASSA** and until real time, to the extent that they are compatible with the unit's availability, and may be used for the FAM
- Bids are made by indicating **one or more quantity/price pairs**, subject to the requirement that quantities must be non-decreasing with price and within a pre-determined price range
- Bids define a **stepwise supply function** (quantity that a unit would be willing to supply at a given price)
- Each product is **cleared independently**, determining a **clearing price**
- Potential extension to the basic design :
 - **'Types'** (quality levels) of services
 - Clearing process extension to implement current **'continuous provision'** preference of TSOs
 - Allowing more complex bids (block bids, complex orders or allowing bidders to specify if supply volumes are divisible)

Secondary trading of DASSA Orders

- The importance of secondary trading was raised by several stakeholders during our bilateral meetings
- Secondary trading needed to accommodate service suppliers whose **availability is known only close to real time:**
 - Allows providers to lay off obligations from DASSA Orders that they cannot meet ...
 - ... or to take over others' obligations if they can supply at lower cost
- Trading would be subject to **eligibility criteria**, to ensure that buyers of DASSA Orders have capability to provide the service
- Upon trading a DASSA Order, the change of holder would need to be **notified to the TSOs**, and all rights and liabilities related to the Order would be transferred to new holder
- HLD did not envisage a **centralised platform for secondary trading** but
 - even with bilateral trading some system is needed for TSOs to monitor eligibility of trades and track current Order Holders and
 - extension to a trading platform could improve liquidity and efficiency of outcomes

DASSA process and consequences





Future Arrangements for System Services (FASS)

The Final Assignment Mechanism (FAM)

The FAM and associated payments

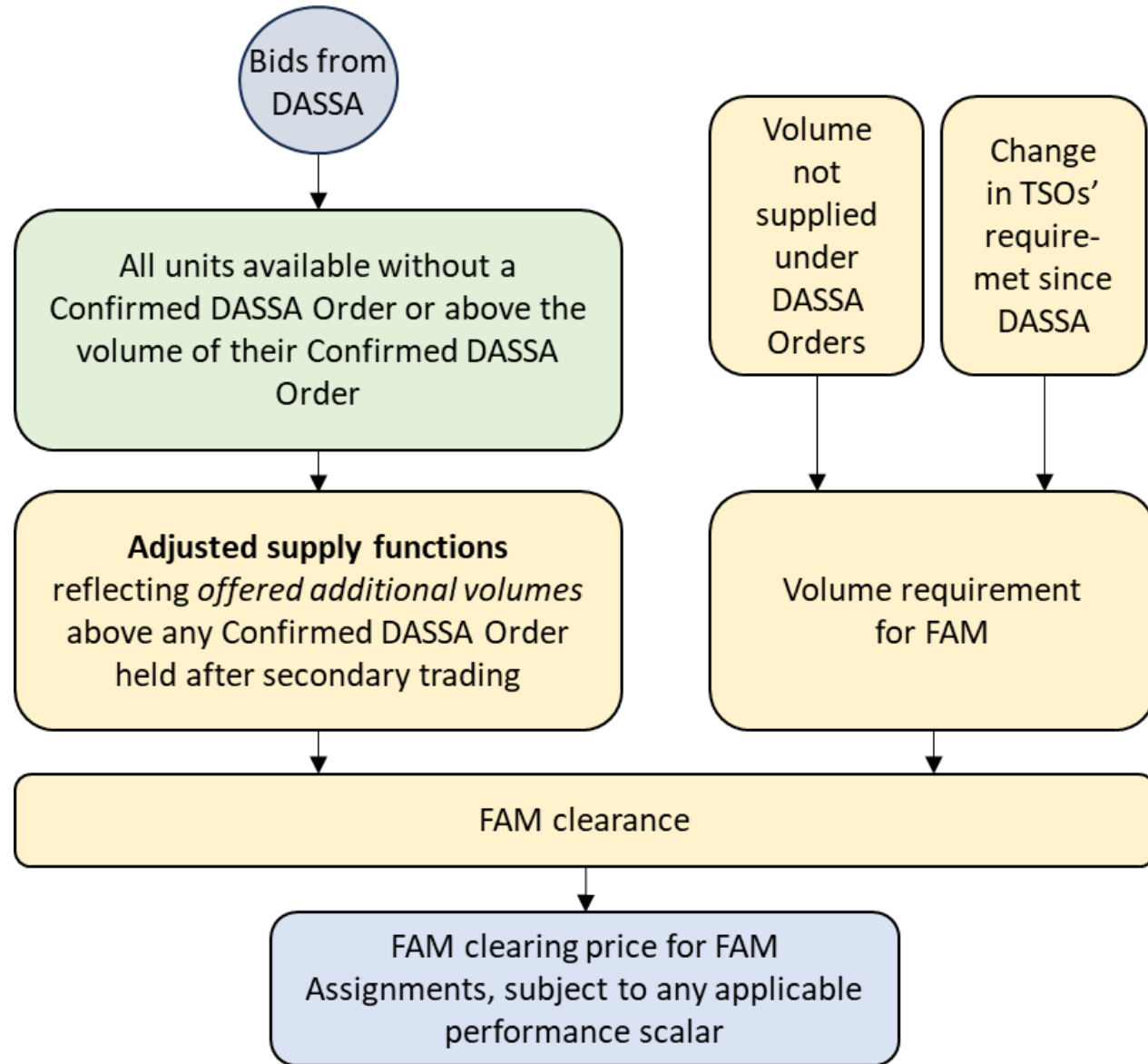
- **The FAM does not 'procure' system services**, as BM and Dispatch process have already ensured that system requirements are met
- The FAM is an **ex-post mechanism to identify payments** for System Service volume requirements not supplied under Confirmed DASSA Orders
- Identifies payments (FAM Assignments) for any additional volume (beyond that already supplied under Confirmed DASSA Orders) **necessary** to meet system requirements ...
- ... but does not pay for any **eventual oversupply** (e.g. collateral to supply of energy)
- There is no new bidding process for the FAM – it uses **Adjusted Supply Functions** based on the bids already received in the DASSA (or default bids where there is no corresponding DASSA bid for the volume)
- Suppliers can **enter the FAM by making themselves available** to supply the product
- Units that have declared availability are subject to the **event performance scalar regime** that could potentially reduce future revenues from the DASSA and FAM (regardless of whether they subsequently obtain a FAM Assignment)
- FAM determines its own **clearing price** (which could be higher or lower than the DASSA clearing price), using the same clearing approach as the DASSA

Adjusted Supply Functions

- The volume supplied by a unit *in excess of* the volume in any Confirmed DASSA Order it holds determines the maximum quantity for that unit's **Adjusted Supply Function**
- As the mechanism is applied ex-post, we *already* know the volume eventually supplied by each unit for the relevant time period (based on their availability and any failure to deliver when called upon/triggered)...
- ... and what part of that supply is *already* covered by (and remunerated through) Confirmed DASSA Orders
- Where the unit submitted a DASSA bid for that product:
 - We look up the price at which the unit offered to supply that *additional* quantity
 - Where we have a quantity point that is greater than those in its DASSA bid, the price for that point is the highest price in the DASSA bid
- Where the unit had not submitted a DASSA bid for that product, we use a **default price**, which in the long run we propose to set to the minimum price in the range available for DASSA bids

See the full report for worked examples....

FAM process and consequences





Future Arrangements for System Services (FASS)

Extensions

DASSA extensions

Our recommendations include three potential extensions to the auction process:

- The possibility of a service having several **quality levels** (FFR being the leading example of this);
- Procuring '**continuous provision**' of several reserve services from a common provider; and
- **Complex bids** such as a minimum revenue requirement or a 'block' bid applying across time periods.

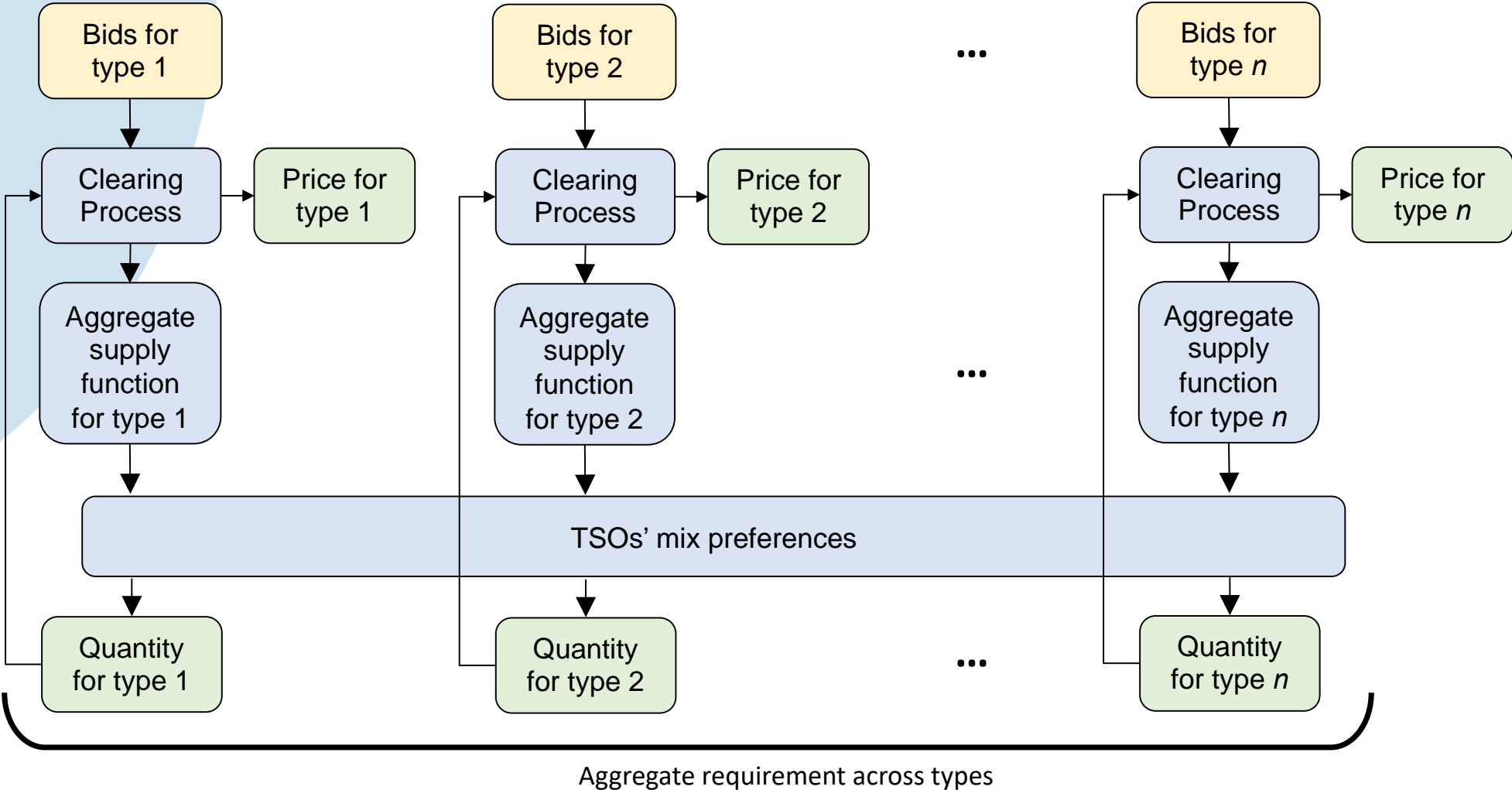
Do not
require
changes
to the
bid
structure

Requires
changes

DASSA extension: Quality aspects

- Some services may have **quality aspects** that the TSOs might want to consider when procuring them – these would be defined as different product ‘types’
- Where a superior quality service is more effective in meeting the TSOs’ system stability requirement than an inferior service, there will be some **trade-off** between procuring a smaller amount of a more effective superior type against a larger amount of less effective inferior type
- We can then define a total volume requirement across these different quality products, and then clear all these products simultaneously to minimise total cost whilst meeting the requirement – this will determine the **mix of products** procured by the TSOs
- **Procurement objective** for product mix set prior to receiving bids, rather than adjusted in the light of bids

Clearing with types

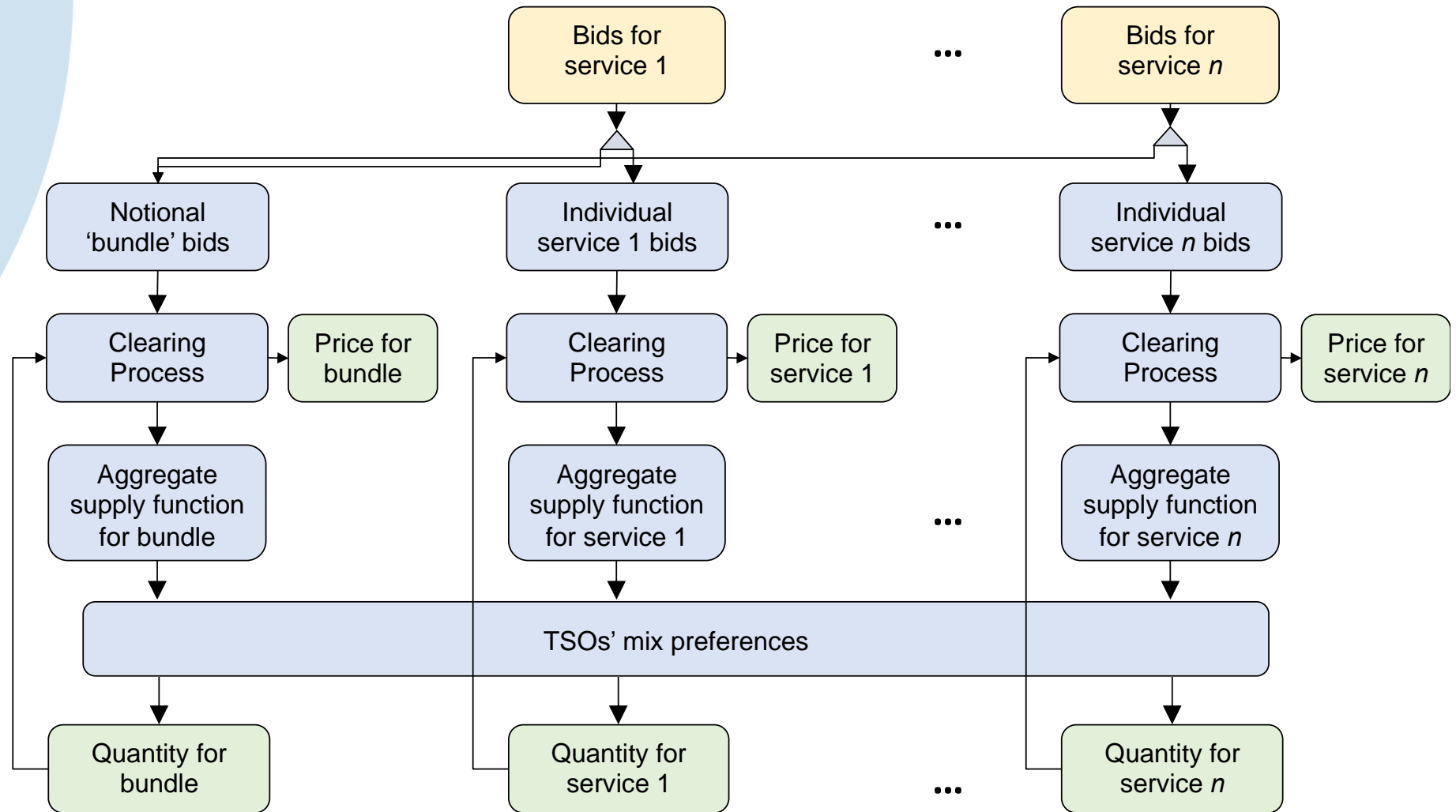


DASSA

Extension: continuous provision

- Continuous provision of reserve across different time scales (which constitute different products) from a **common provider** has operational benefits for the TSOs
- Under DS3 arrangements reflected in a **continuous provision scalar** that adds a premium to unitary suppliers of multiple services
- We propose to maintain separate bids for these products, but to clear them jointly taking into account the preference for continuous provision (reflected in additional willingness to pay for a 'bundled service' made of a combination of products)
 - Bidders would make **separate bids for each product**
 - Where a single unit has bid for all the component services of a bundled service, calculate a hypothetical bid for a **hypothetical bundled service** by summing the offered prices
 - Clear the services jointly to ensure the total volume requirement for each product is met, and calculate clearing prices for individual and bundled products
- The preference for bundled product would be pre-determined rather than adjusted by the TSO in light of bids

Clearing with continuous provision



DASSA

Extension: Complex bids across time period

- Complex bids can be used to express **interrelationships between time periods**
- These structures are potentially useful in energy supply where it is costly for a provider to start up and these costs need to be recovered across multiple settlement periods, but may be **less relevant for System Services**
- Where complex bids were allowed, we would propose to use a similar clearing process as for the DAM, where instead of solving jointly across different products (which might be infeasible with many bids) we simply use an iterative process:
 - Clear products separately
 - Check if we need to remove any bids where the requirements in the complex order is not met
 - Clear again without such bids if any bids have been removed, or otherwise end

FAM Extensions

We consider two potential extensions to allow bidders to specify price points that would allow units to **make offers into the FAM only**:

1. **Zero-volume bids:**

Allow units to specify a zero-quantity price point as their DASSA bid, which would then be the price for the Adjusted Supply Function (with the quantity eventually supplied by the unit) going into the FAM

2. **Capping volume offered in the DASSA:**

Allow units to specify a range of price-quantities in the DASSA, but also a cap on the volume they offer in the DASSA –price-quantity points beyond this volume would only apply for calculating the Adjusted Supply Function going into the FAM



Future Arrangements for System Services (FASS)

Transition arrangements

Transition to new arrangements

- We envisage phasing the **proportion of System Services volumes** being procured through the DASSA
- The **remaining volume requirement would be procured through the FAM**, where units can participate by simply making themselves available (their adjusted supply function being then at the default price)
- We propose a gradual decrease of the default price to incentivise participation in the DASSA without affecting FAM suppliers – the default price could be set around the current regulated tariff level and be reduced progressively
- It may also be reasonable to start with **relatively lenient compensation payments** for DASSA Orders that lapse, and increase them progressively as a greater proportion of the volume is run through the DASSA to ensure they are proportionate to the costs incurred by TSOs
- We do not envisage holding **less frequent auctions** as these would undermine investment from technologies that cannot commit for longer periods or well in advance of real time



Future Arrangements for System Services (FASS)

Long-term contracts

The need for long-term contracts

Benefits	Drawbacks
Lower risk for new investments especially for system service specialists	Contracted volumes may not participate in a meaningful way in the spot markets reducing liquidity and short-run efficiency
Through new investments, the TSOs benefit from greater resilience through having more options for sourcing System Services	Long-term contracting routes may be better suited to some technologies, but not others raising the risk of distorting competition between technologies
Competition in daily System Services markets may be improved if new providers enter on foot of long-term contracts	A loss of short-run cost efficiency where costs vary over time and long-term contracts do not represent the current cheapest providers
Less exposure to price volatility for the TSOs	Less innovation if routes for new entrants become limited once long-term contracts are awarded

Long-term contract models

General principles

- Primacy of the daily auction market – long term contracts should not undermine the short-term market
- Avoid absolute long-term commitments to take volume at fixed prices where costs may fall through the entry of new technologies, as this could lead to unnecessary and inefficient future expenditure

Shortlisted long-term contract models

1. **Price taking model:** Units awarded a contract commit to being available to supply a certain volume of System Services at the eventual DASSA clearing price, in exchange for a contract fee
2. **Price taking model with a price floor:** As above, but with a guaranteed price for (all or part of) their volume
3. **Committed bid model:** Units awarded a contract commit to bidding a given volume, at a maximum price (but the unit may bid at a lower price)



Future Arrangements for System Services (FASS)

Feedback sought

Feedback main points

We are interested in stakeholders' views on:

- The **advanced options for DASSA bids** (block bids, complex orders or allowing bidders to specify if supply volumes are divisible) and any potential concerns these may raise
- The role of **secondary trading** and the importance of a **centralised secondary trading platform** to facilitate this
- The proposed approach to promote **continuous provision**
- The advanced options to **allow DASSA bidders to specify prices for the FAM that would not apply in the DASSA** (zero-volume bids, capping volume offered in the DASSA) and the potential concerns these may raise
- The need for **long-term contracts** and investors' preferences around the various options for incorporating DASSA-determined prices into long-term contracts
- The proposed **transition arrangements**

Future Steps

- Considerations for the interactions of interconnectors with DASSA, both to the EU and the UK
- Locational considerations applicable to the System Services, such as for reactive power



Future Arrangements for System Services (FASS)

Appendix

Key SEM-C requirements

- **Daily auctions** integrated in the current power market schedule
- **Future-proofness**
 - Initially include reserve, then ramping
 - Able to accommodate at least **all current system services**
 - Possibility of '**big bang**' closure of DS3 by May 2026
- Services should be contracted on a **firm basis**
 - Payments for **availability**, rather than actual use
 - Consequence for **non-performance**
- Potential for **time of day differentiation** of system services
- **Price signals** reported by auctions to guide investment decisions
- Compatibility with **secondary trading** (though not initially required)
- Potential **parallel long-term procurement**, but this should not compromise liquidity of daily auctions and only for 1-year ahead
- Rolling application framework to support **new entry**