

# **Integrated Single Electricity Market (I-SEM)**

## **High Level Design Consultation Paper**

# Agenda

10:30 Welcome

10:40 Consultation Paper – General Overview

11:10 Worked Examples

11:40 Open Floor Discussion

12:45 Lunch

13:30 Consultation Paper – Options Assessment

14:00 Consultation Paper – CRM

14:30 Open Floor Discussion

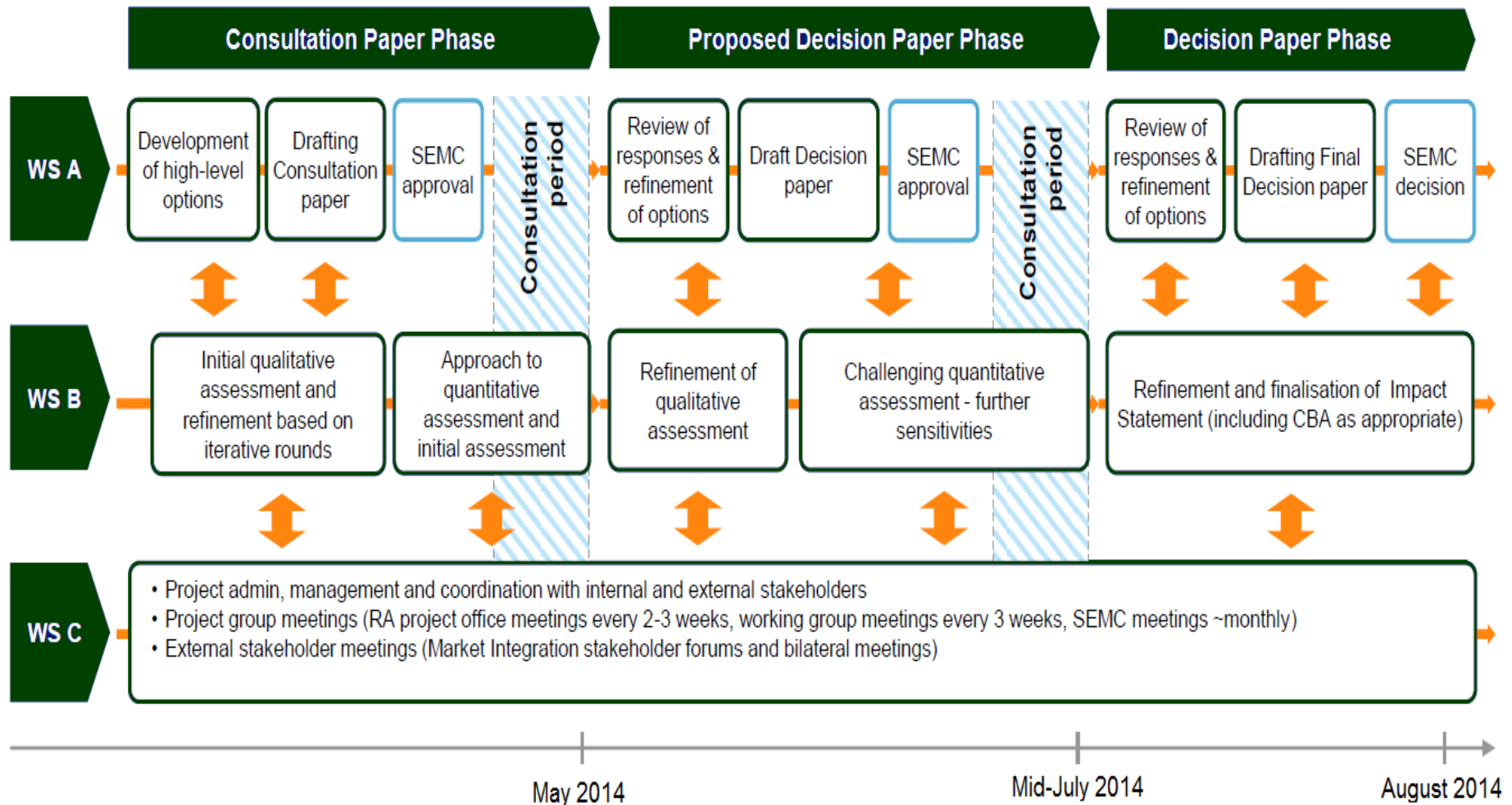
15:00 Delivery of 2016 – Next Steps

15:10 Closing Remarks

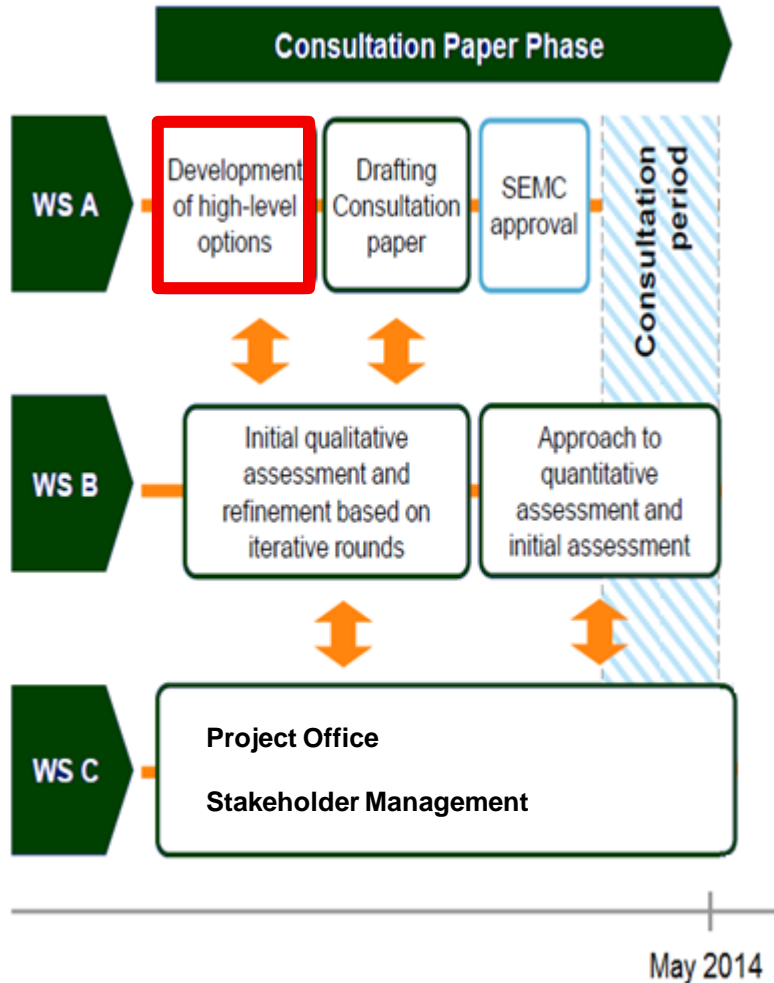
15:15 End

- Options of High Level Design
- Qualitative assessment
- Capacity Remuneration Mechanism (CRM)
- Integrated Single Electricity Market (I-SEM)

# I-SEM Delivery Plan

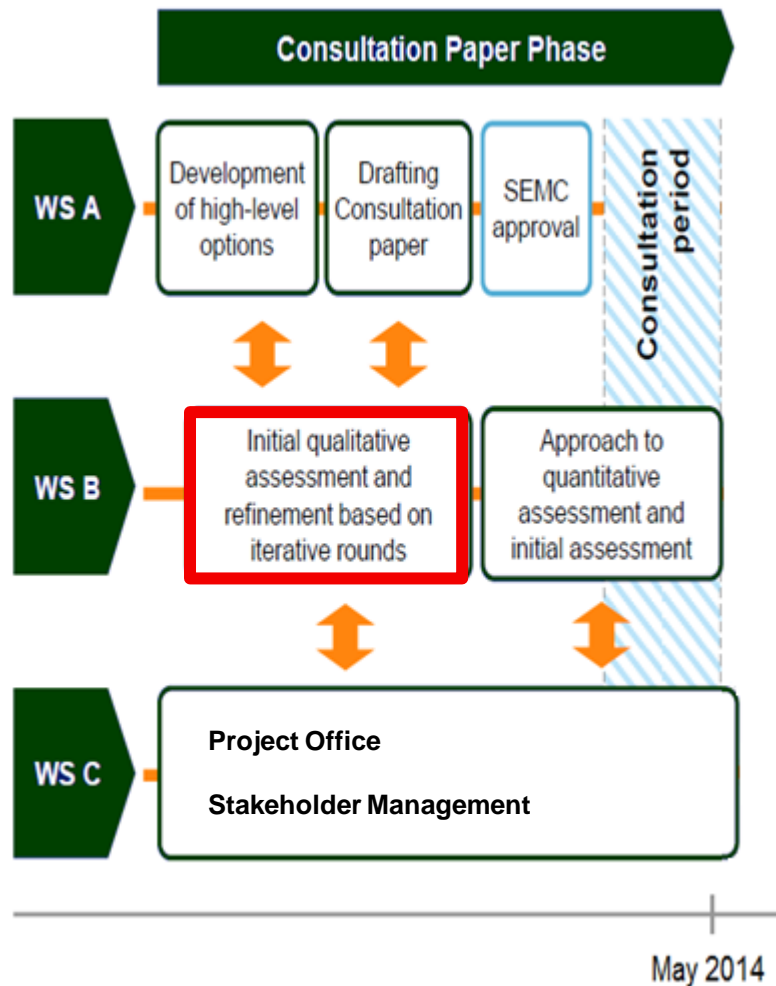


# Completed Milestones



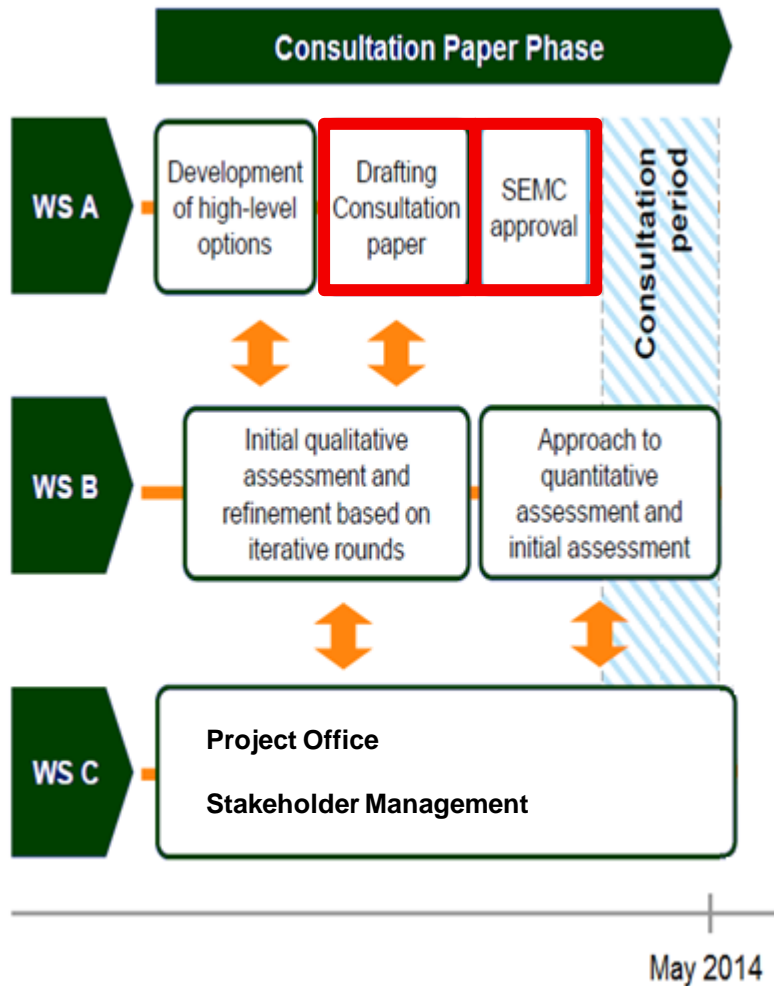
- Building Block Definition
  - Definition of trading timeframes
  - Bid Format
  - Dispatch models
- Definition of viable options
- International experience (Nordpool, BETTA, MIBEL, PJM)

# Completed Milestones



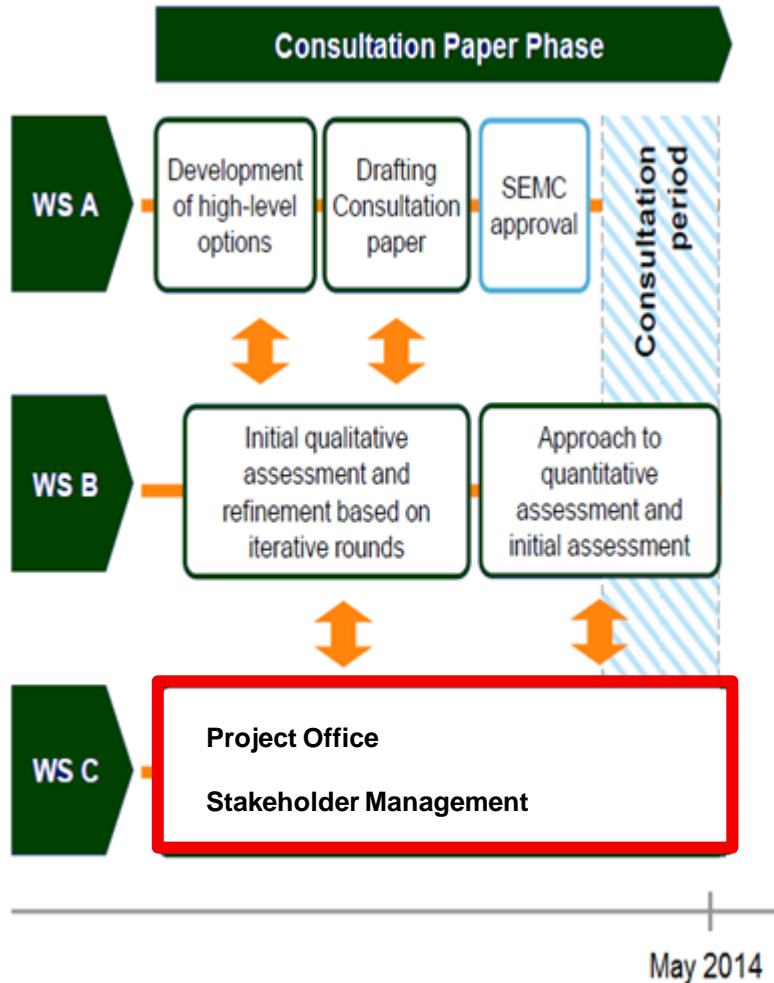
- Qualitative Assessment
  - Identification of indicators
  - And the analysis of how each option performs against each indicator.

# Completed Milestones



- Process of reduction from 9 to 4 options
- Emerging Thinking Paper November's SEMC Meeting
- SEMC Meeting January (Approval)
- Engagement with Departments

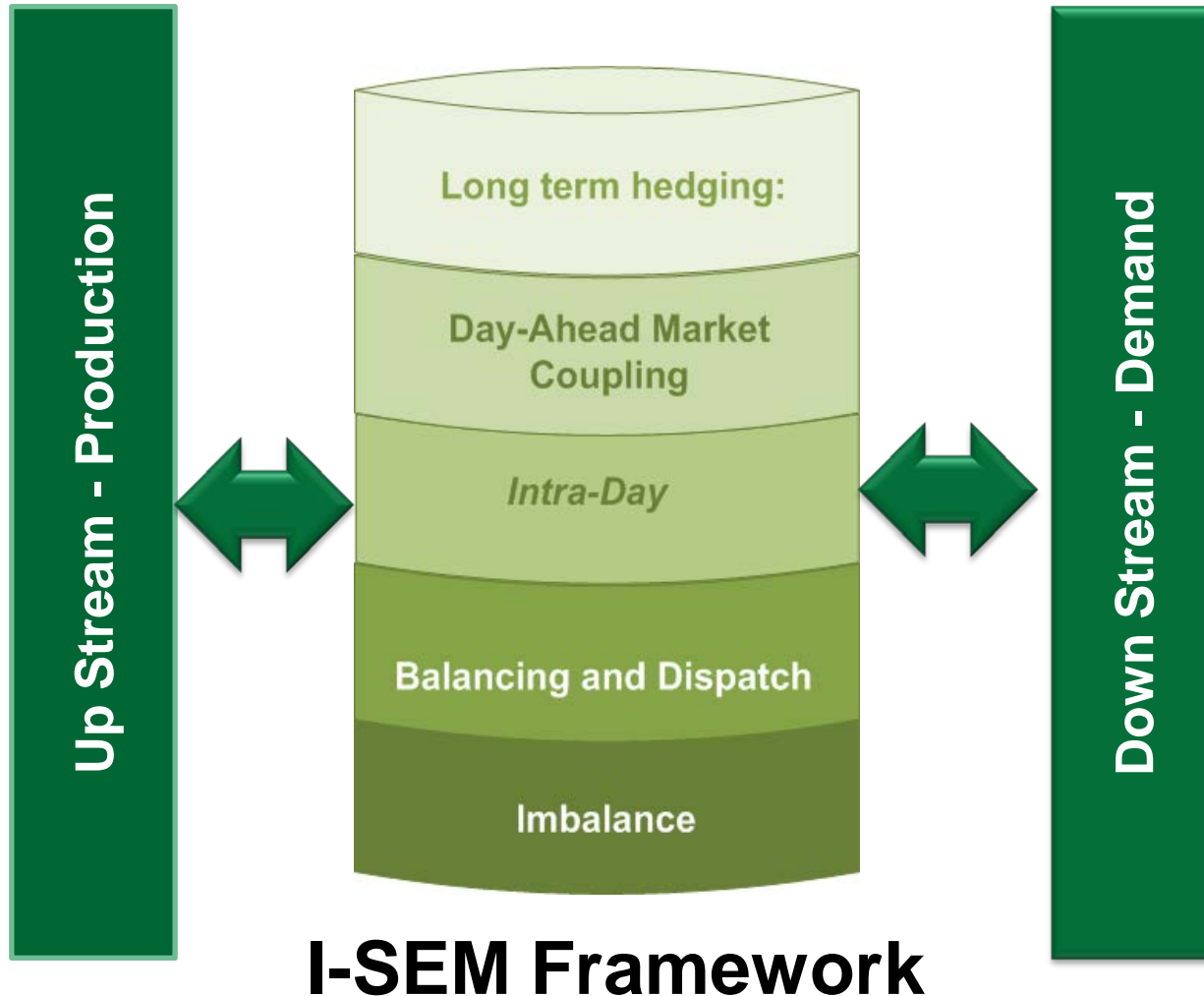
# Completed Milestones



- Development of PM Framework
  - Governance
  - Project Initiation Document
  - Risk Register
  - Activities log
  - Communications Strategy
- Open Stakeholder Forum
- HLD Review Group

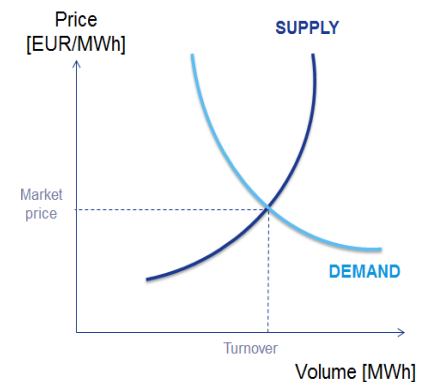


# Topics for HLD of energy Trading Arrangements



- Stratification
  - Timeframes
  - Prices

- Market Participants
  - Price Makers



# Platform for Day Ahead



## Euphemia Algorithm

# Arrangements for long-term trading



- **Internal**
  - Physical
  - Financial (CfDs)
- **Cross-Border**
  - Financial Transmission Rights (**FTRs**)
  - Physical Transmission Rights (**PTRs**)

# Participation in European markets (DA/ID)



- **Gate Closure and Trading Day (all options)**
  - Common European Gate Closure (GC) expected to be at 1100 GMT (D-1)
  - Trading day 23:00 to 23:00
- **Bid Composition**
  - Portfolio (Generation and Demand)
  - Gross Portfolio (Generation or Demand)
  - Unit (Generating Units)
- **Bid Format**
  - Simple
  - Block
  - Sophisticated
- **Participation**
  - Voluntary or Mandatory

# Participation in European markets (DA/ID)



- **Bid Composition (As per Day Ahead)**
  - Portfolio
  - Gross Portfolio
  - Unit
- **Bid Format (As per Day Ahead)**
  - Simple
  - Block
  - Sophisticated
- **Participation**
  - Exclusive
  - Non-Exclusive

# Process for dispatch



- **Starting point of dispatch**
  - FW, DA and ID nominations
  - Minimization of production cost
- **Balancing Bids**
  - INCs and DECs (Increment and Decrement prices)
  - Complex Bids

# Imbalance/Pool settlement



- **Pool Arrangements**

- ex-post pool
- Unconstrained market schedule
- Based on complex bids

- **Separated Balancing Mechanism**

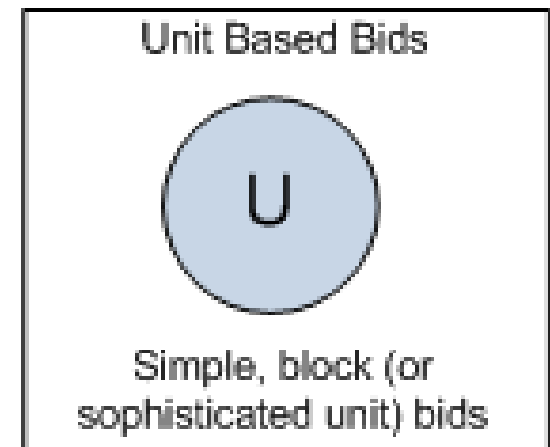
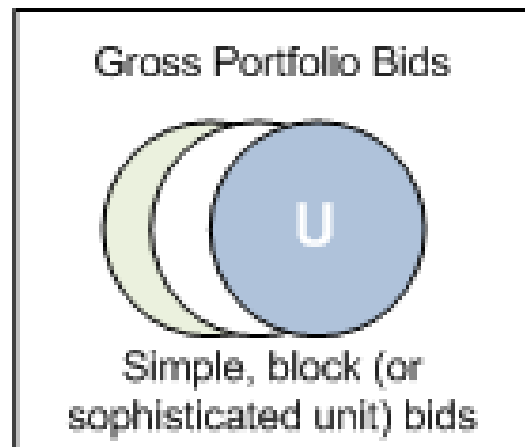
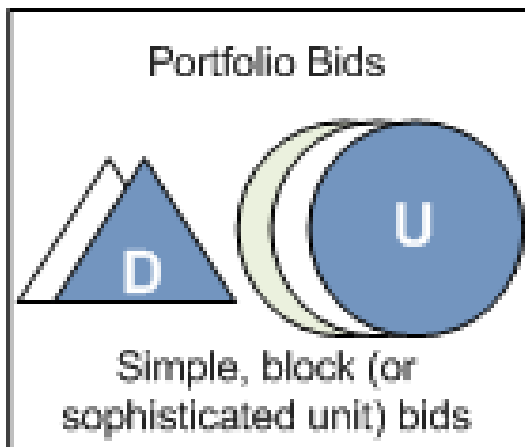
- Costs of energy balancing actions
- Based INCs and DECc

# HLD Options

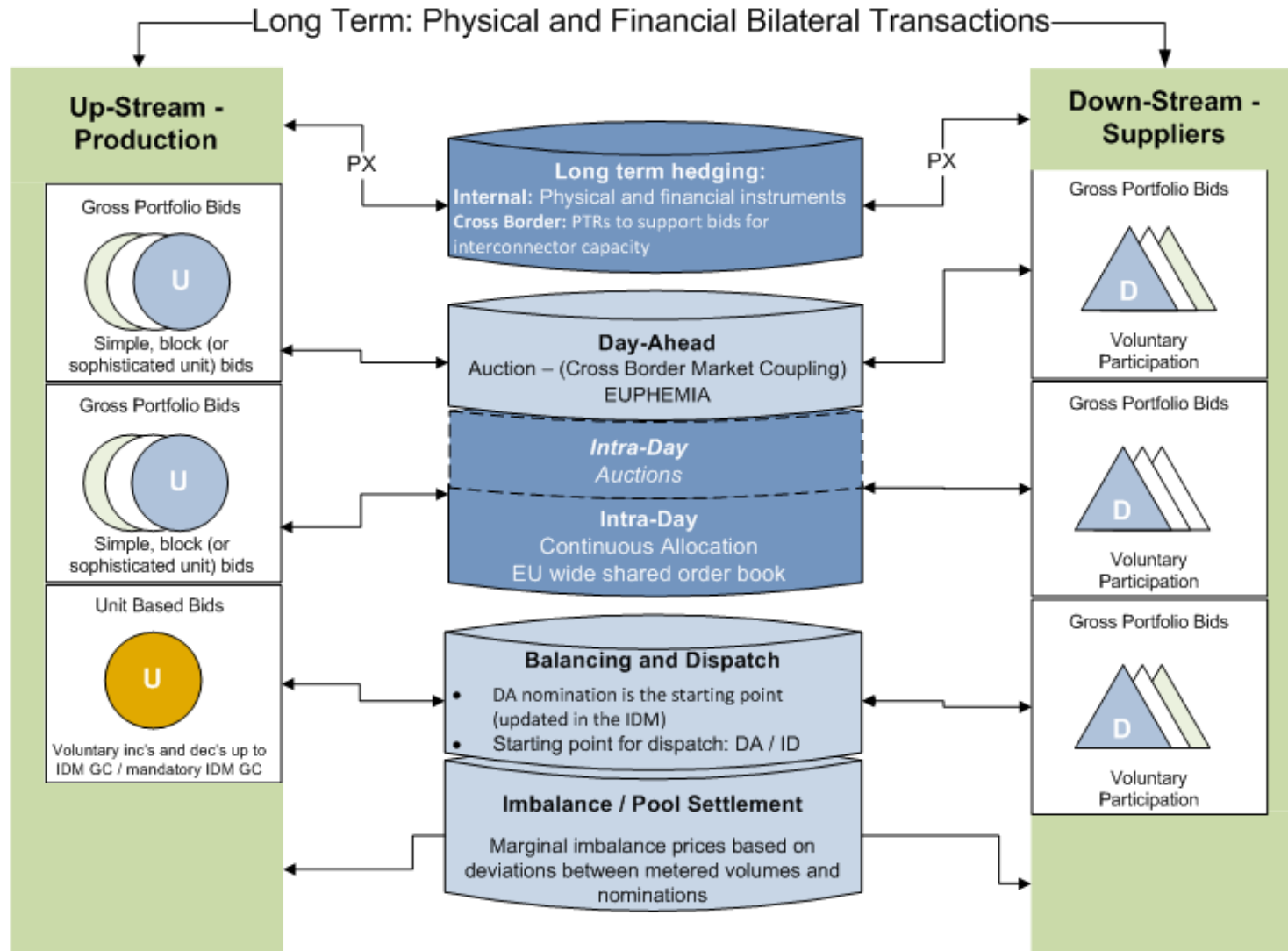
- 1. Adapted Decentralised Market**
- 2. Mandatory Ex-post pool for net volumes**
- 3. Mandatory Centralised Market**
- 4. Gross Pool – Net Settlement Market**



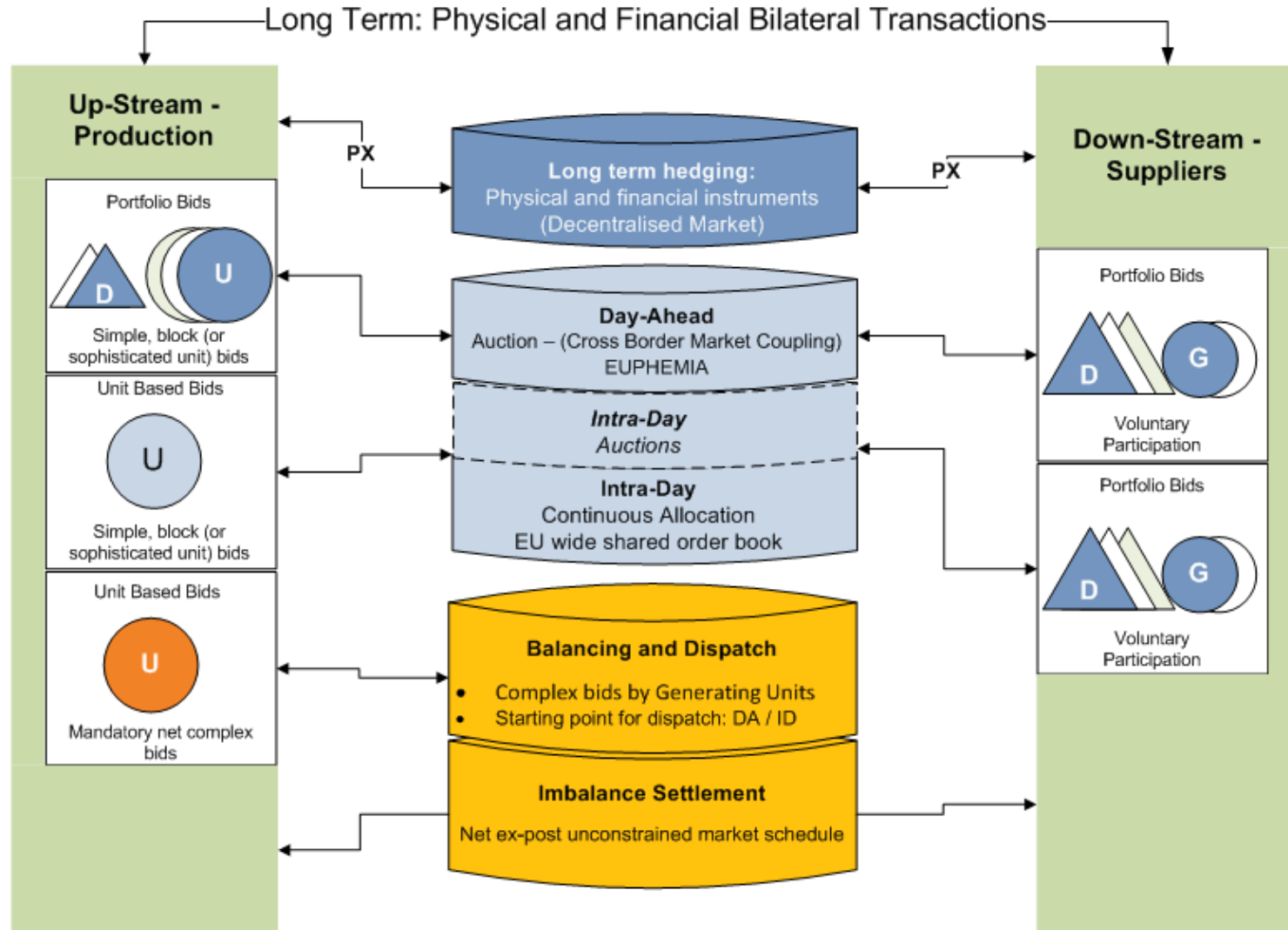
# Conventions



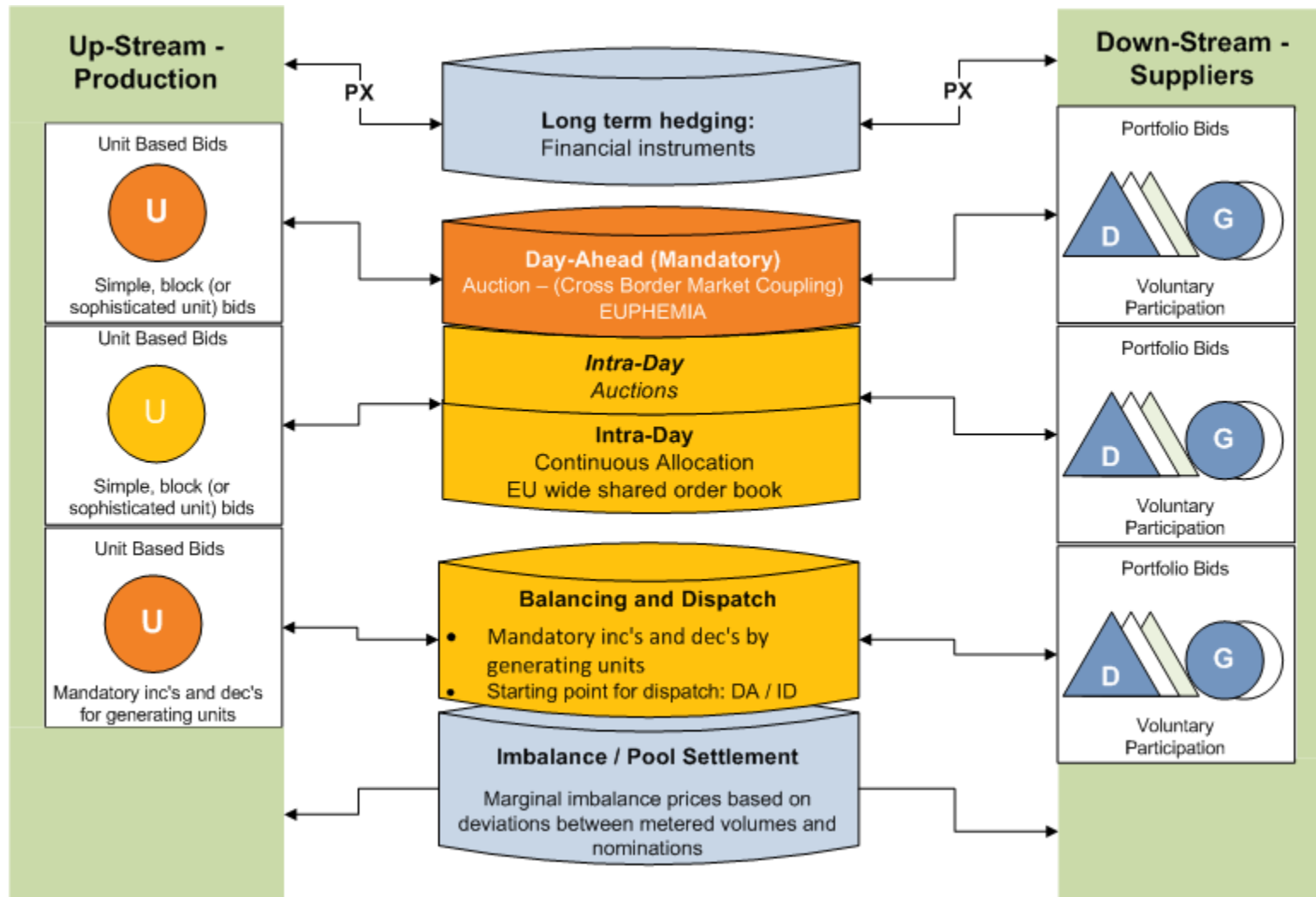
# Option 1: Adapted Decentralised Market



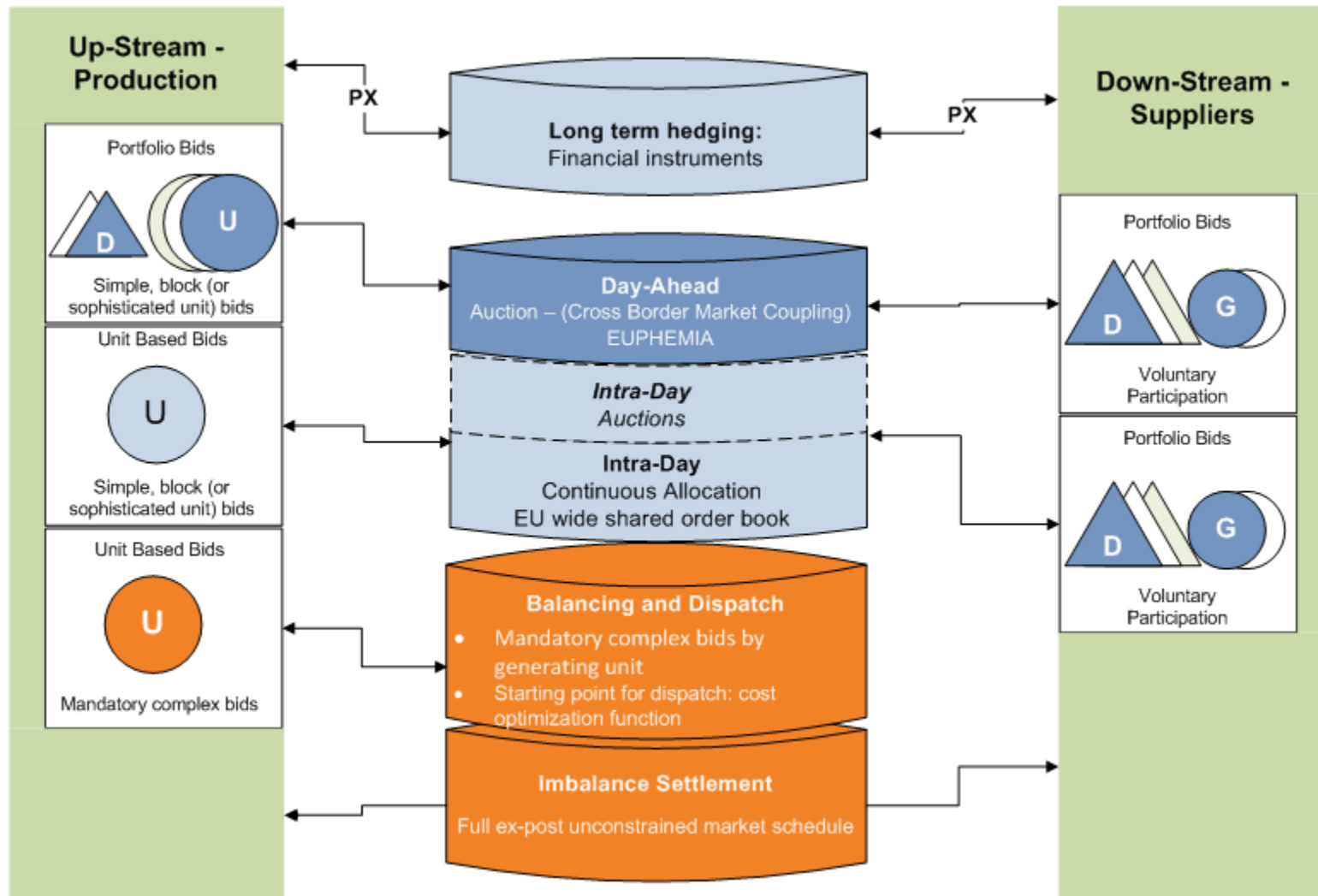
# Option 2: Mandatory ex-post pool for net volumes



# Option 3: Mandatory Centralised Market



# Option 4: Gross pool – net settlement market



- I. Design Flexibility
- II. Zones
- III. Market Power Mitigation Measures
- IV. CRM Positioning:
  - All of the options work with or without
  - Neutral position
  - Basis for decision
    - Developments on neighboring markets.
    - EC Consultation on state intervention
    - TSO GAR
    - Consultation Responses
    - Draft Decision Paper will present a recommendation for energy and CRM

# Next Steps

- **March**
  - Bilateral Meetings - 11<sup>th</sup> (Belfast) and 12<sup>th</sup> (Dublin)
- **April**
  - 4<sup>th</sup> - Deadline for responses to the consultation paper
  - 24<sup>th</sup> SEMC – Discussion on the responses and approach for the draft decision
- **May**
  - 29<sup>th</sup> SEMC to approve Draft (minded to ) Decision.

# **Integrated Single Electricity Market (I-SEM)**

## **Worked Examples**

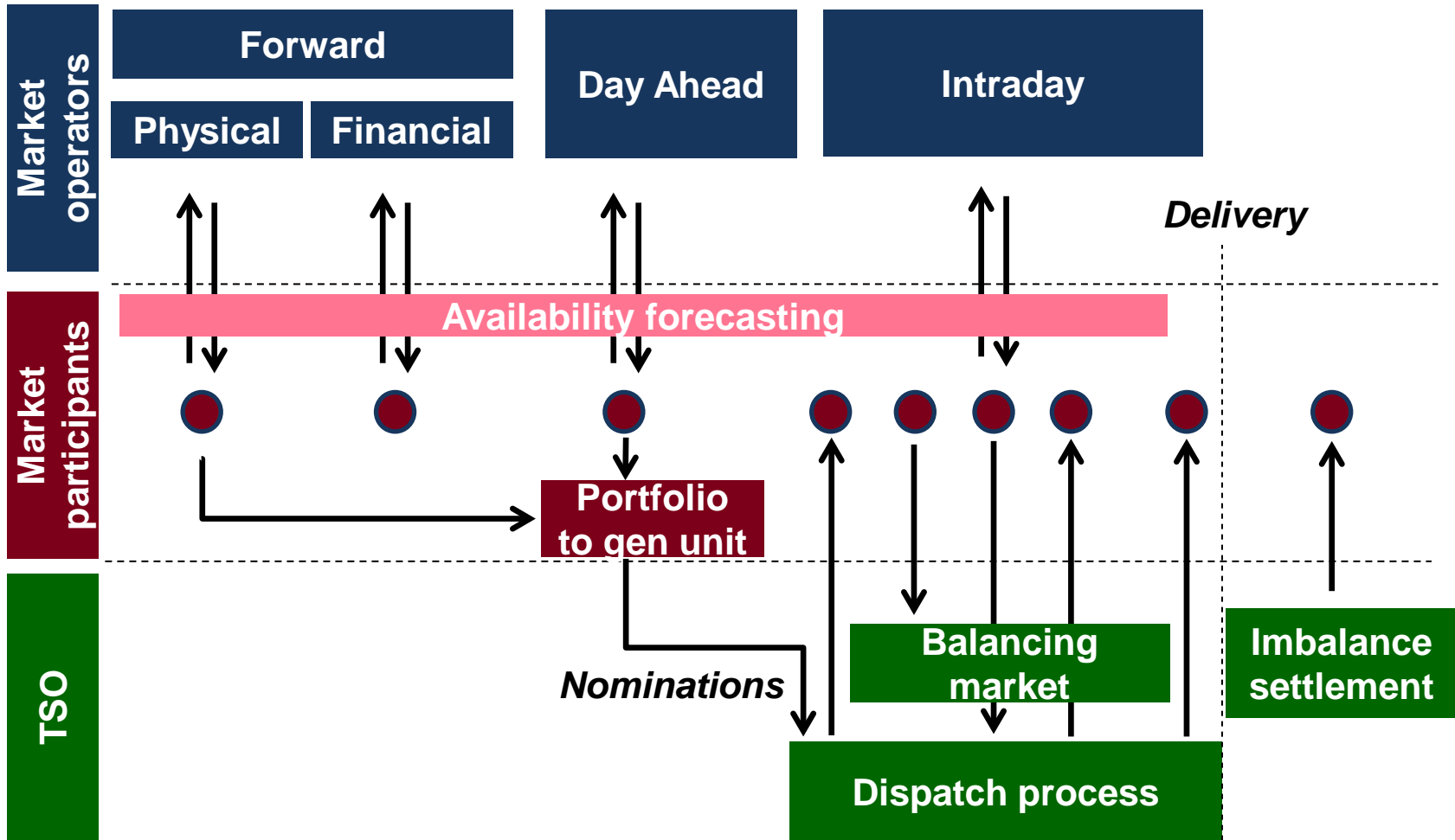
**25 February 2014**



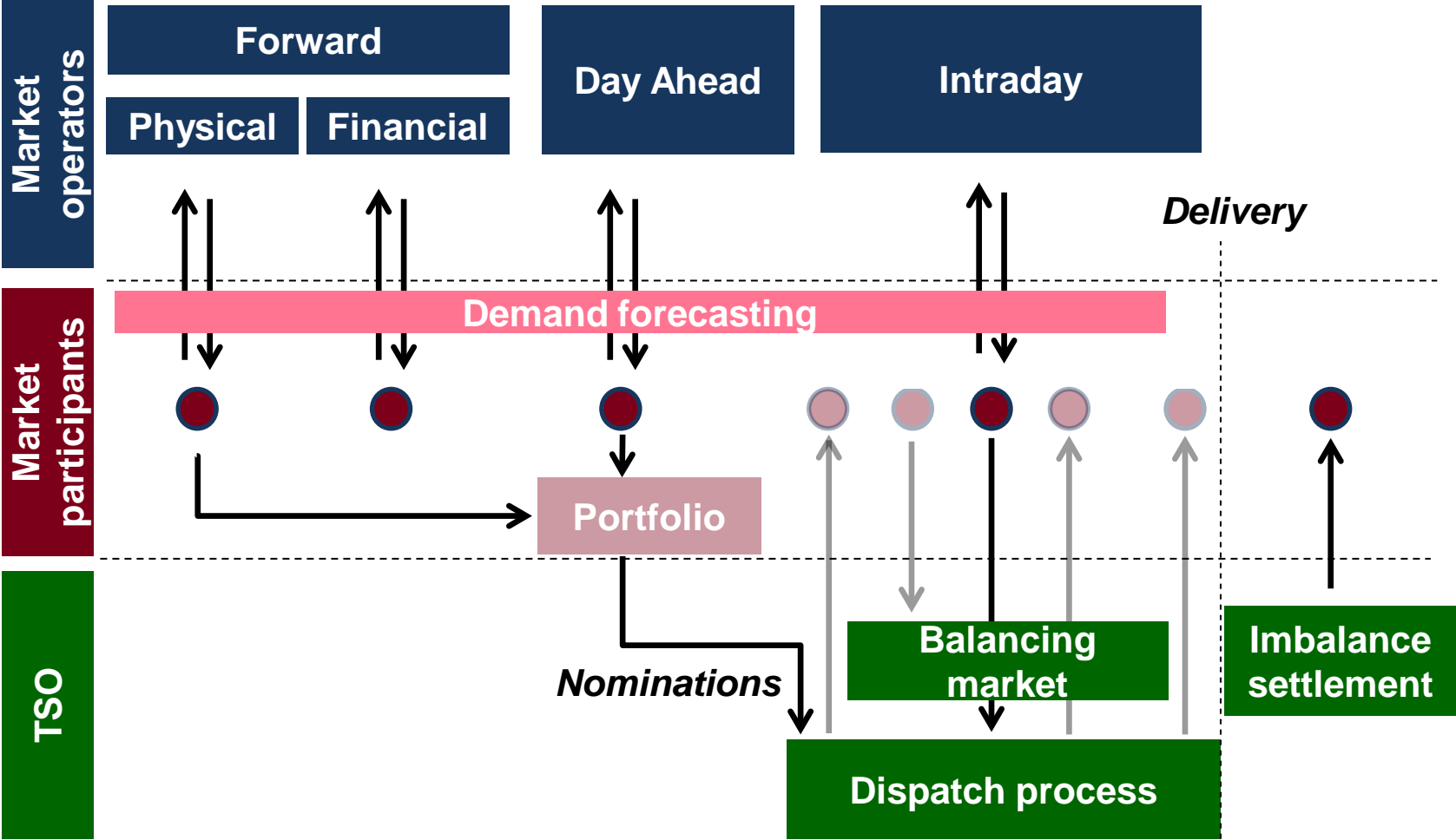
# Variety of bid types in EUPHEMIA (European Day-Ahead Market Coupling)

- Simple price-quantity pairs for a single trading period (e.g. €/MWh)
- Block bids allow market participants to link bids that relate to different trading periods (within the same day)
- Sophisticated bid structures allow market participants to submit simple price-quantity pairs that are **subject to** at least one of the following conditions being met:
  - Minimum income condition with a fixed part (which could cover start-up cost) and a variable part (per MWh)
  - Load gradient (relating to ramping)
  - Scheduled stop
- More detail available – e.g. from [www.eirgrid.com](http://www.eirgrid.com)

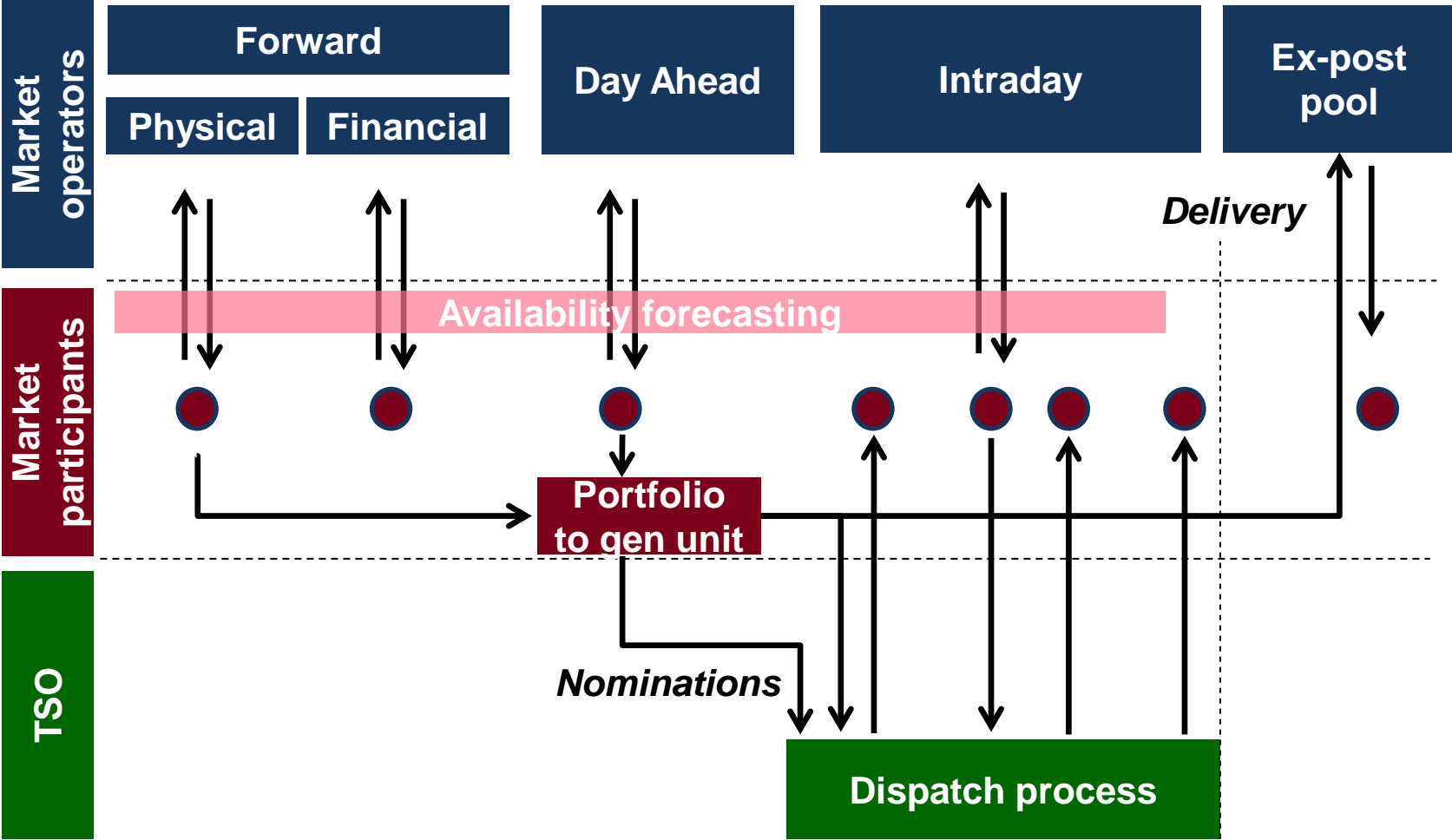
# Adapted Decentralised Market: 'Generator Units' (inc DSU)



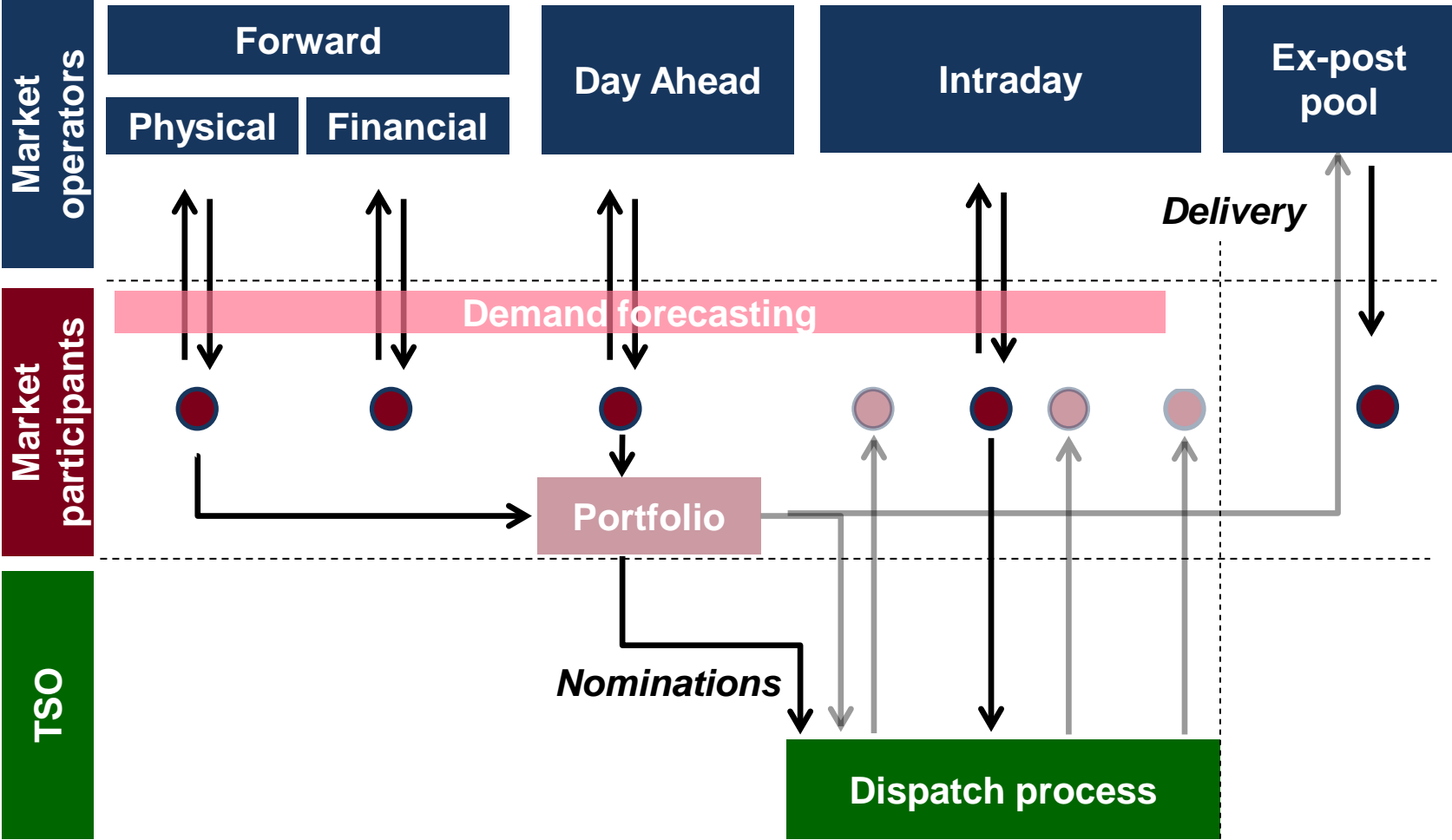
# Adapted Decentralised Market: Suppliers (exc DSU)



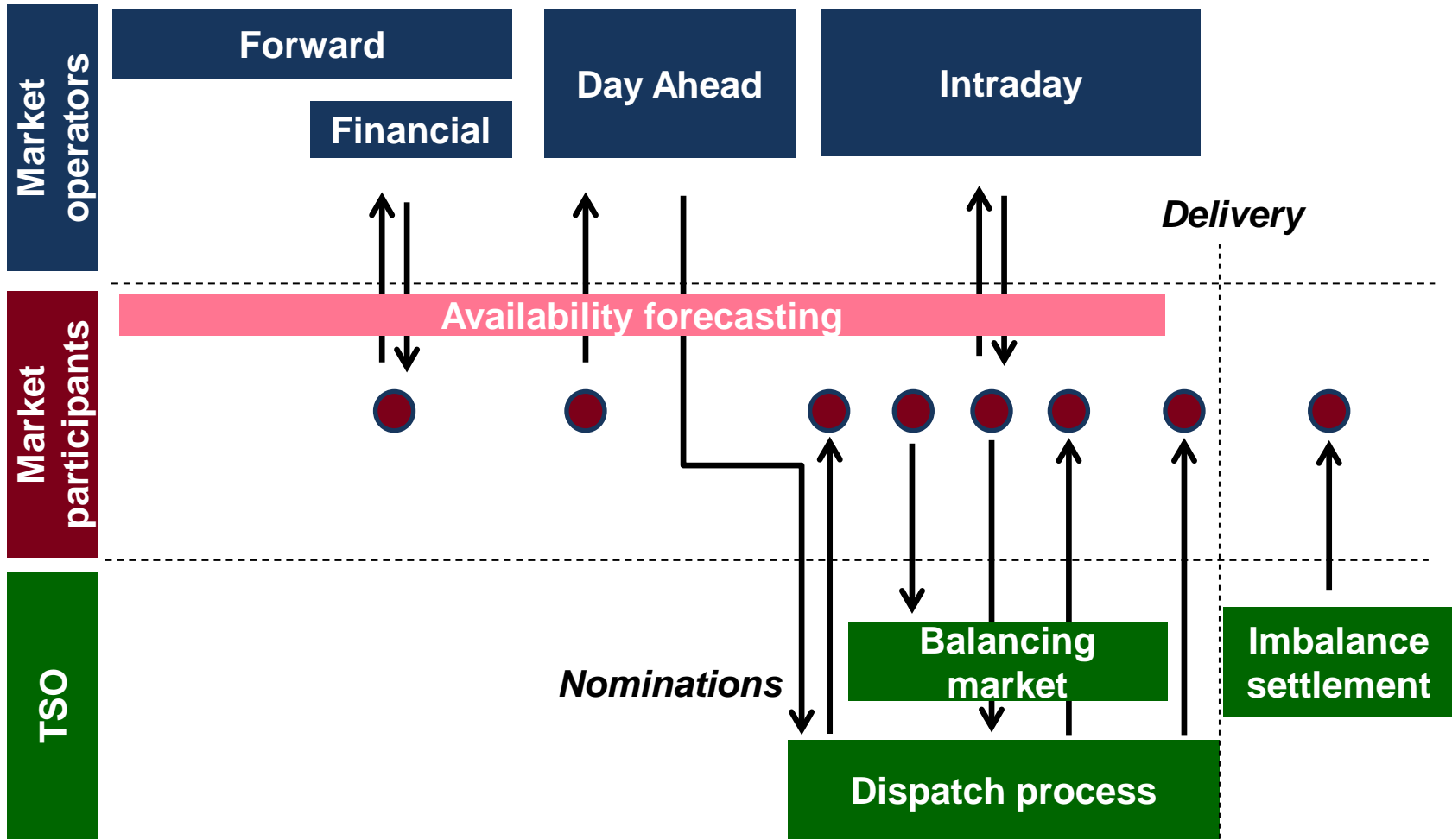
# Mandatory Ex-Post Pool for Net Volumes: 'Generator Units' (inc DSU)



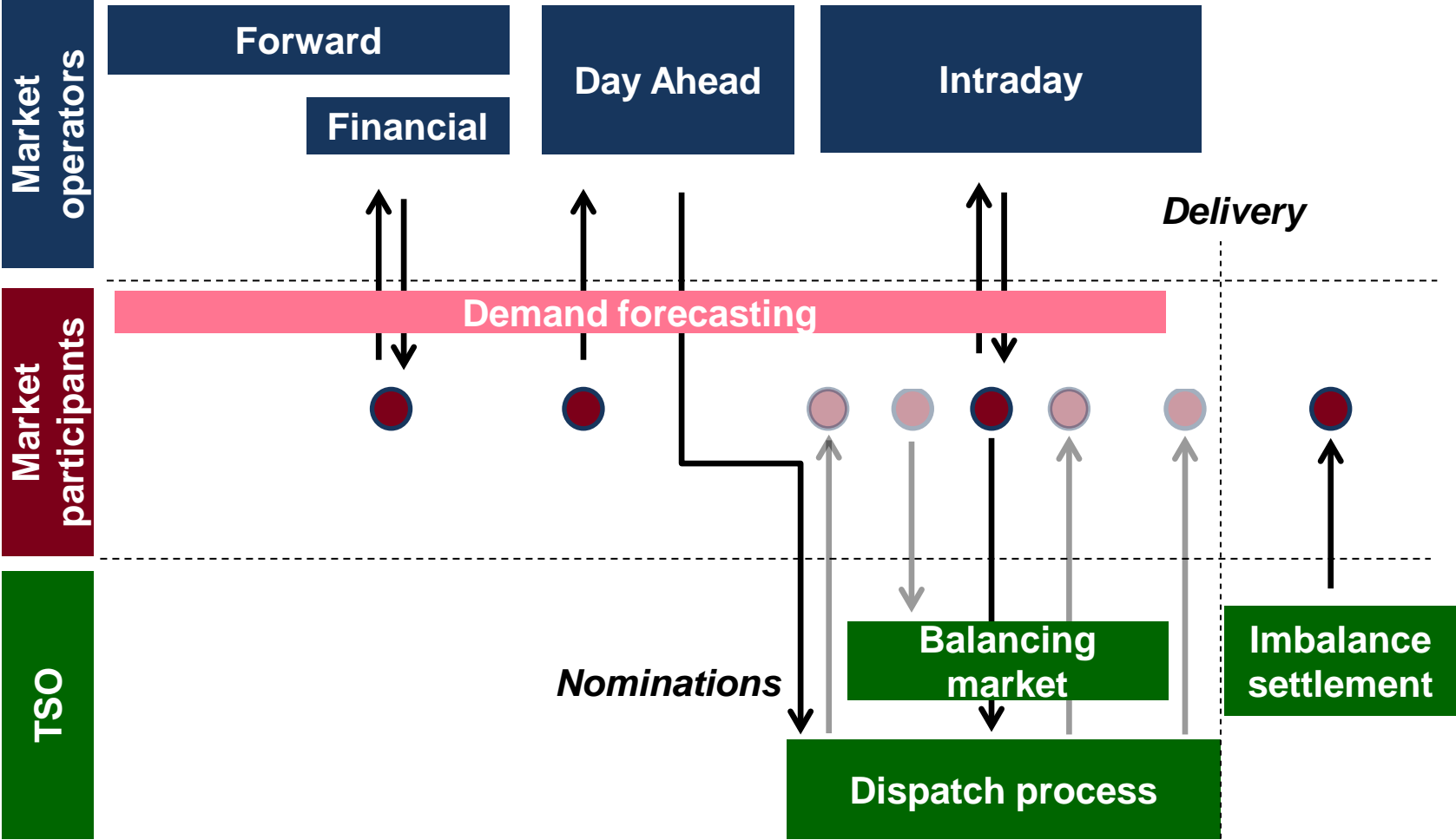
# Mandatory Ex-Post Pool for Net Volumes: Suppliers (exc DSU)



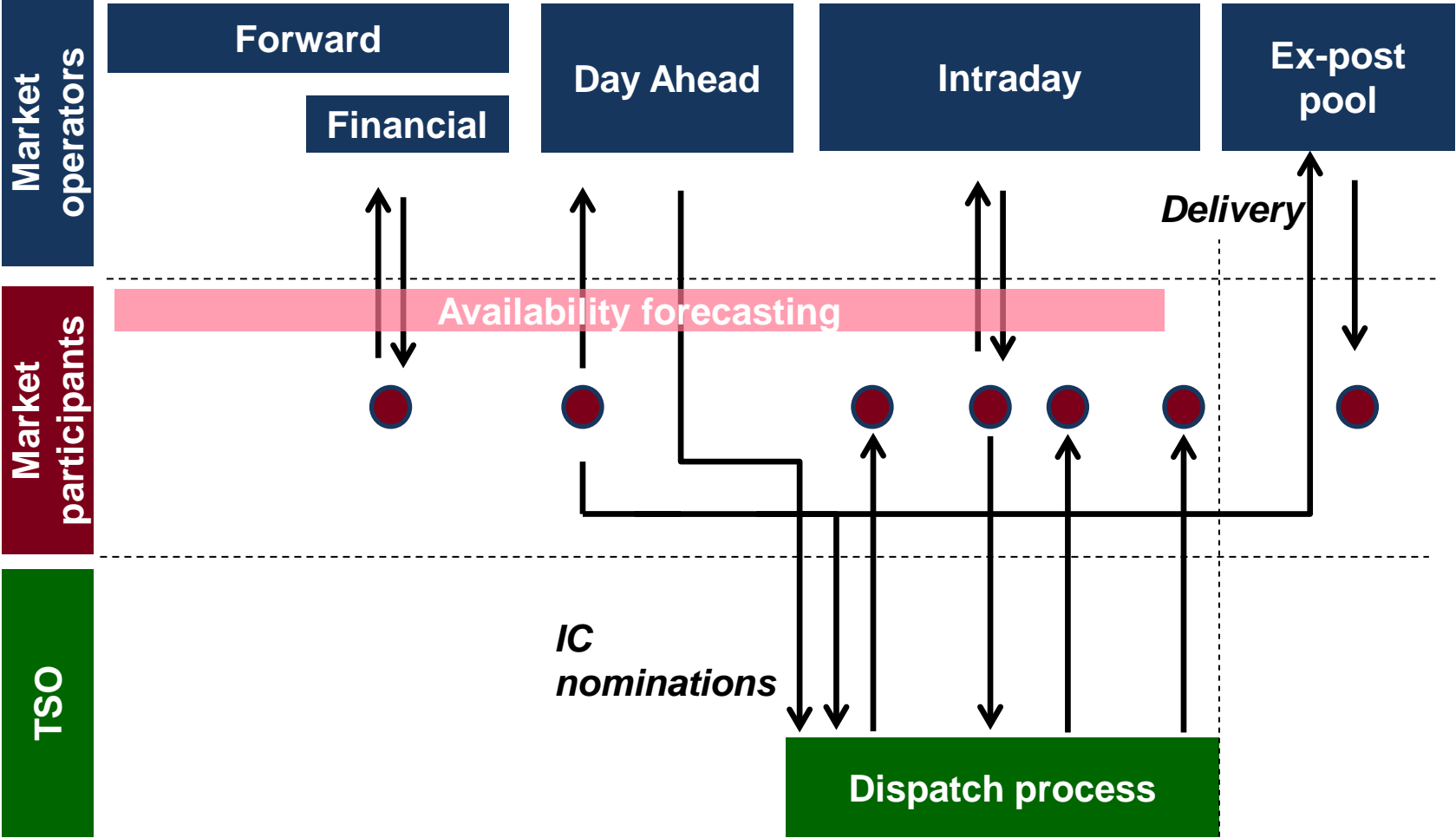
# Mandatory Centralised Market: 'Generator Units' (inc DSU)



# Mandatory Centralised Market: Suppliers (exc DSU)

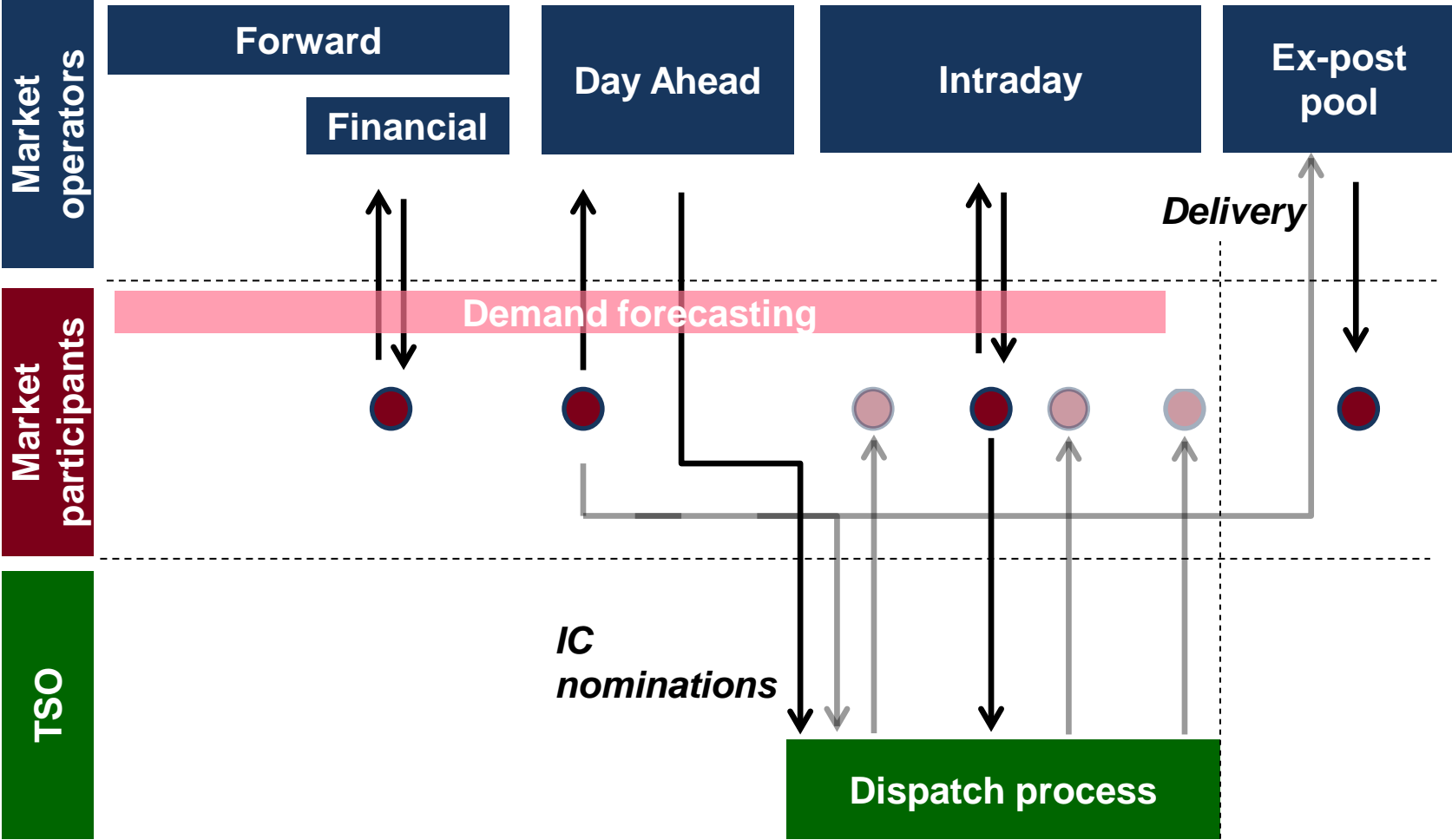


# Gross Pool – Net Settlement Market: ‘Generator Units’ (inc DSU)





# Gross Pool – Net Settlement Market: Suppliers (exc DSU)



# **Integrated Single Electricity Market (I-SEM)**

## **Open Floor Discussion**

**25 February 2014**

# **Integrated Single Electricity Market (I-SEM)**

## **Options - Impact Assessment**

**25 February 2014**

- Regulatory Impact Assessment essential for evidence based decision making
- Three aspects of RIA:
  - Monetised aggregate CBA
  - Social and distributional impacts
  - Qualitative (strategic and sustainability) issues
- Next Steps Paper (Feb '13) set out commitment that:
  - the High Level Design shall be subject to an impact statement that is in line with best practice.
  - There will be a cost benefit analysis, carried out at an appropriate stage, which takes into account the key energy policy objectives which are materially affected by the wholesale electricity market high level design.

- **Identify the problem/reason for intervention**
  - European Target Model by the end of 2016.
- **Agree Objectives – Next Steps Paper**
  - the SEM Committee Next Steps Decision Paper set out High Level Principles
- **Qualitative assessment – Consultation and Draft Decision**
  - carried out against the criteria for the revised HLD of the all-island electricity market.
- **Quantitative assessment - Draft Decision**
  - –Monetised assessment of options in form of CBA
- **Full Impact Statement – Final Decision**
  - taking into account the full range of qualitative and quantitative assessment, including distributional effects, risks, etc.

# Nine Assessment Principles

- **Security of supply:** the chosen wholesale market design should facilitate the operation of the system that meets relevant security standards.
- **Stability:** the trading arrangements should be stable and predictable throughout the lifetime of the market, for reasons of investor confidence and cost of capital considerations.
- **Efficiency:** market design should, in so far as it is practical to do so, result in the most economic (i.e., least cost) dispatch of available plant.
- **Practicality/Cost:** the cost of implementing and participating in the wholesale market arrangements should be minimised;

# Nine Assessment Principles

- **Equity:** the market design should allocate the costs and benefits associated with the production, transportation and consumption of electricity in a fair and reasonable manner.
- **Competition:** the trading arrangements should promote competition; incentivise appropriate investment and operation within the market; and should not inhibit efficient entry or exit, all in a transparent and objective manner.
- **Environmental:** The market design should promote renewable energy sources and facilitate government targets for renewables.
- **Adaptive:** Should provide an appropriate basis for the development and modification of the arrangements in a straightforward and cost effective manner.
- **The Internal Electricity Market:** the market design should efficiently implement the Target Model and ensure efficient cross border trade

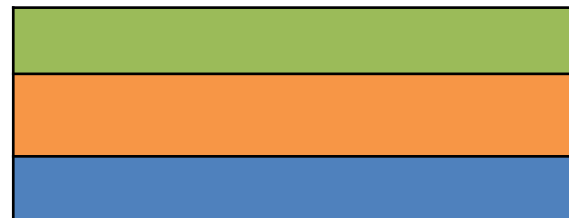
# I-SEM Consultation – Assessment Process

- I-SEM HLD Consultation qualitatively assesses each energy option against the nine HLD criteria
- At this point, we do not describe any option as having a particular strength or weakness under:
  - Security of supply
  - Efficiency
  - Adaptive
- Descriptive text and colour coded system applied to set out initial strengths and weaknesses of this option:

Possible strength










Neutral

Possible weakness























# Adapted Decentralised Market – Summary Assessment

SoS		Can be delivered by this option
Stability		Depends on regulatory intervention needed to deliver liquid DAM and IDM
Efficiency		Can be delivered by this option
Practicality		Not a particular strength or weakness of this option
Equity		If liquid, DAM and IDM provide some routes to markets, with more cost targeting
Competition		Depends on effectiveness of competition from greater choice of trading strategies
Environment		Wind exposed to imbalance prices, which can be managed if liquid IDM
Adaptive		Governance processes to be determined during detailed design phase
IEM		Liquidity promoting measures should facilitate efficient DAM flows










# Ex-post Pool for Net Volumes – Summary Assessment

SoS		Can be delivered by this option
Stability		Difficult to manage balance between pool and European markets
Efficiency		Can be delivered by this option
Practicality		Depends on balance of physical trading between pool and European markets
Equity		Liquidity may be split between pool and European markets
Competition		Depends on balance of physical trading between pool and European markets
Environment		Depends on balance of physical trading between pool and European markets
Adaptive		Not a particular strength or weakness of this option
IEM		Net pool not fit neatly into either a balancing market, or fully integrated dispatch

# Mandatory Centralised Market – Summary Assessment

SoS		Can be delivered by this option
Stability		Depends on regulatory intervention needed to enforce ADM and IDM rules
Efficiency		Can be delivered by this option
Practicality		Not a particular strength or weakness of this option
Equity		DAM and IDM provide route to markets, with more targeting of costs
Competition		Could be strong within 'approved' market places, with high transparency
Environment		Wind exposed to imbalance prices, which can be managed in liquid IDM
Adaptive		Not a particular strength or weakness of this option
IEM		Compliant with requirements, with DAM/IDM supporting effective flows

# Gross Pool Net Settlement Market – Summary Assessment

SoS		Can be delivered by this option
Stability		Limited change from current arrangements
Efficiency		Can be delivered by this option
Practicality		Not a particular strength or weakness of this option
Equity		Pool provides route to markets, with greater targeting of costs and benefits
Competition		Strong regulation of market participant behaviour
Environment		Ex-post pool attractive for wind, but may need additional incentives for flexibility
Adaptive		Not a particular strength or weakness of this option
IEM		Compliant with requirements, but more unfamiliar model in European context

# Next Steps for Impact Assessment

- Consultation responses from stakeholders
- Further evidence gathering for qualitative and quantitative assessment
- Draft Decision Paper – June 2014
  - Final qualitative assessment.
  - Quantitative assessment of option(s)
- Final Decision Paper – August 2014
  - Qualitative assessment
  - Quantitative assessment
  - assessment of risks and uncertainties; and
  - distribution of costs and benefits across groups

**Integrated Single Electricity Market (I-SEM)  
Capacity Remuneration Mechanisms  
High Level Design Workshop  
25 February 2014**

- Pre SEM capacity issues and price based CRM in place since 2007
- SEM C Medium Term Review – CRM has been a success and should remain in place
- Next Steps Decision – total remuneration from energy, capacity and ancillary services sufficient for SoS
- Link between Target Model and capacity mechanisms – market coupling
- CRMs of various forms being introduced across Europe – GB, Italy, France, Germany
- EC State Aid rules on intervention for generation adequacy

# Remuneration of Capacity in Energy Only Market

- Theory is that capacity costs are recovered in energy- only markets through prices reflecting scarcity
- Challenges of relying on energy-only markets in practice:
  - Indivisibility
  - Missing money
  - Lack of demand side
- A CRM is one option to address the above issues but it does pose challenges:
  - Risk of over-reward
  - Establishing the correct value for capacity remuneration is difficult
  - Risks of distortion (trading, production and investment decisions)

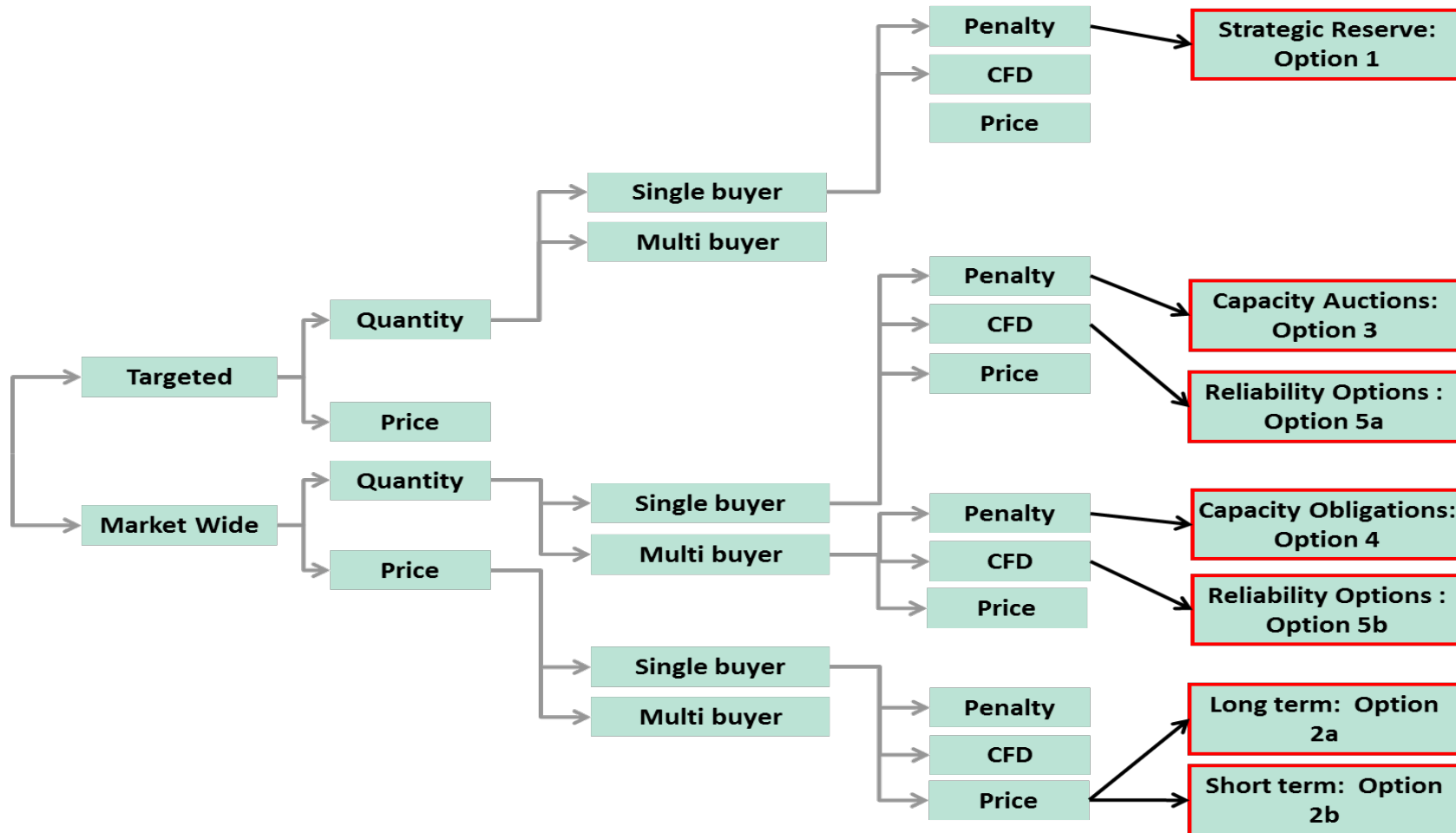


- EC raised concerns with CRMs and potential effects on IEM:
  - Response to existing electricity market distortions
  - Potentially distorts cross border trade and investment
- EC State Aid Guidance Consultation
  - Demonstration of the need
    - Adequacy based on existing standards
    - Demand side
    - Neighbouring markets
    - Existing and planned interconnection
  - Appropriateness
  - Proportionate
    - Only a reasonable rate of return
    - Review process for windfall gains
  - Avoidance of negative effects
    - Neutrality of technology
    - Cross border participation
    - Competition
    - Undermining the functioning of the internal market

# Detailed topics for CRMs

Topics	Sub topics
Scope of the CRM	Market wide or targeted scheme?
Nature of the incentive	Is the CRM price or quantity based?
Timings and distribution of the CRM	Forward visibility of the price signal Timing of certainty Timing of commitment Is re-trading of capacity possible? Granularity of payments
Eligibility for the CRM	Will CRM payments be linked to participation in a particular energy market? Inclusion of CRM price in Market Coupling Cross border participation in the CRM
Level of intervention	Price quantity target setting Procurement of capacity Penalty arrangements

# Types of CRMs



# Consultation Options

- Strategic Reserve
  - Out of market held capacity
    - Sweden and Finland
- Price Based
  - Long term price signal
  - Short term (closer correlation between price and capacity margin)
- Volume Based
  - Capacity Auction
    - Similar to GB scheme
  - Capacity Obligations
    - Similar to planned France scheme
- Reliability Options (One Way CfD)
  - Centralised
  - Decentralised

- EC State Aid Guidelines on Energy and Environment – due to be finalised in Q1/Q2 2014
- SEM Draft Decision Paper will present recommendations for any CRM alongside the energy trading arrangements.
- If any CRM is proposed for inclusion, then it will need to be compatible with the requirements of the EC State Aid Rules

# **Integrated Single Electricity Market (I-SEM)**

## **Open Floor Discussion**

**25 February 2014**

# **Integrated Single Electricity Market (I-SEM)**

## **Delivery of 2016 – Next Steps**

**25 February 2014**

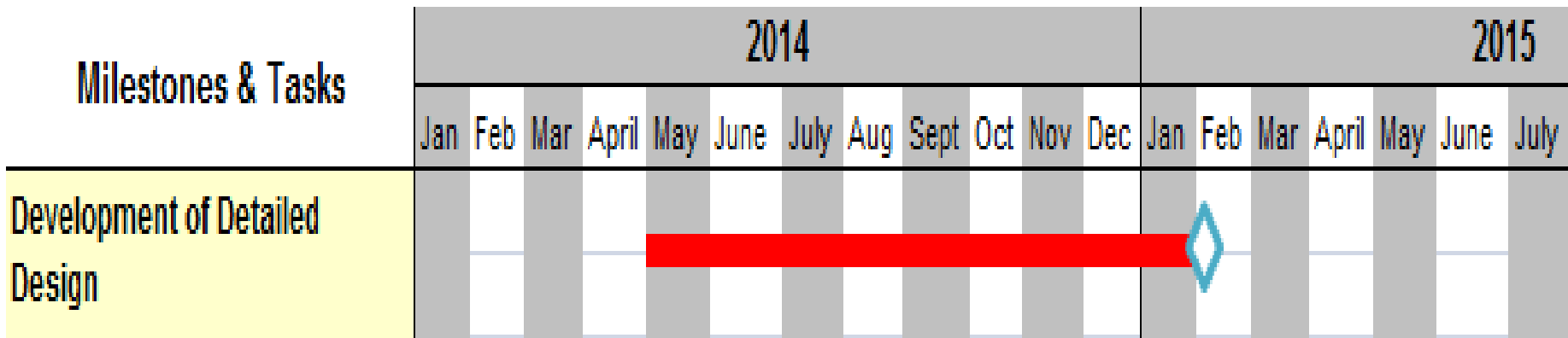
# Overall Programme

- HLD  Implementation
- Key project phases
  - Development of Detailed Design
  - Legal Drafting of Market Rules
  - TSO and MO Readiness
  - Legislation

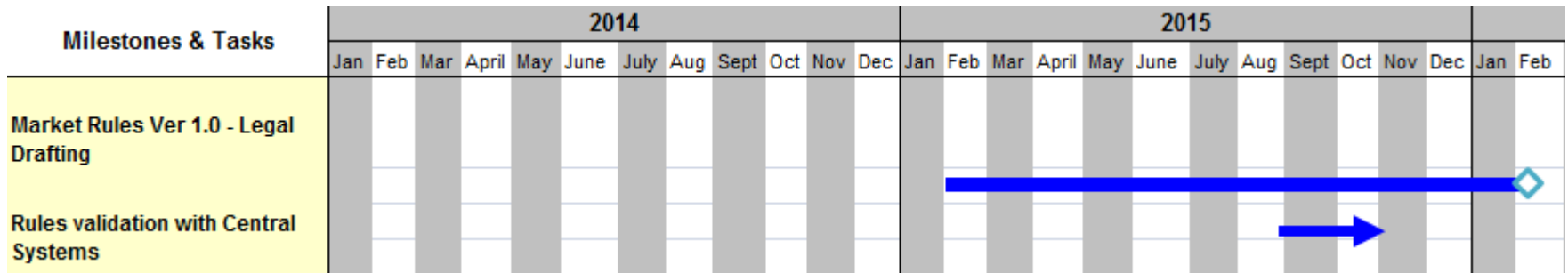


- **Definition of detailed market power mitigation measures**
- **CRM Detailed specification**
- **Details of balancing arrangements**
- **Details of imbalance settlement**
- **Detailed timings of processes**
- **Cash flows, settlement and credit cover**
- **Interaction with DS3**
- **Interaction with existing and new RES (e.g. EMR) support schemes**

# Key Project Phase - Development of Detailed Design



# Key Project Phase – Legal Drafting of Market Rules



- This phase includes:
  - Trade and Settlement Code
  - Agreed Procedures and etc.

# Overall Programme

- TSOs and MO Market Systems
- Joint Effort by RAs and TSOs
  - Terms of Reference currently being drafted
  - Agreed Approach Document being drafted to outline:
    - Project organisation
    - Reporting/ working arrangements
    - Communication channels
- Legislation

# **Integrated Single Electricity Market (I-SEM)**

## **Closing Remarks**

**25 February 2014**