I-SEM CRM
Emerging Thinking - Decision 2

Industry Workshop

Dundalk, 5th April 2016

SEM committee

Agenda

10.00-10.30 Registration and coffee

10.30–10.35 Welcome and Introduction

10.35-11.20 Cross Border + Interconnector De-Rating

11.20-12.00 Secondary Trading

12.00-12.20 Level of Administered Scarcity Price

12.20-13.00 Contractual Arrangements

- Implementation Agreement
- Other Design Issues

Close

Some CRM2 decisions covered previously

April 5th Workshop

- Cross Border
- Secondary Trading
- Administered Scarcity Price
- Implementation Agreement
- Stop Loss
- Option Fee Indexation

March 16th Workshop

Presented previously

- Contract (Price fix) Length
- New Build Lead Time
- Transition

Cross Border Participation

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Cross Border Participation in the CRM

- There are a number of reasons to consider the extent that providers located outside the I-SEM zone can meet I-SEM capacity requirements:
  - It could lead to lower costs
  - EU State Aid Guidelines require us to consider it
- Cross border options
  - Net off demand
  - Interconnector led
    - Performance based
    - Availability
  - FTR Led
  - Provider (Generator) led
    - Performance based
    - Availability
  - Hybrid
- Some basic principles (In an ideal world)
  - I-SEM Customers should only pay for capacity delivered to I-SEM
  - Treatment broadly equivalent to that for I-SEM providers

Cross Border Model – Preferred solution

Target is 'Hybrid' model

- Consistent with current understanding of EU thinking
- RA analysis identifies it as the best option , but impractical
- Thinking is for interconnectors and non I-SEM capacity to use availability-based approach
- EU Paper expected in April

Go for an interim

- FTR not available in right timescales
- Hybrid (and Provider led) impractical in advance of regional solution
- Net off demand lacks market based signals
- Interconnector led model provides opportunity for some market based signals on need for more interconnection

Pursue Regional solution

- Will work with GB and others towards a regional solution

What is the Hybrid Option?

This approach is a hybrid of the “Provider Led” and “Interconnector Led” approaches.

- Providers located outside the I-SEM are able to participate directly in the I-SEM CRM;
- The interconnectors will make any difference payments which arise as a result of a technical failure of their asset;
- Providers make the remainder of difference payments
- The Interconnectors are able to retain any difference in the clearing (€/MWyear) prices for capacity in I-SEM and the relevant neighbouring market.

Cross Border Model – interim solution

- Interim solution will be:
  - **Interconnector Led** model
    - Other solutions may provide better signals, but are too complicated for day 1
  - **Availability based**
  - **Priced as other providers:** Interconnector Reliability Options have same option fee as other I-SEM providers

Interconnector De-rating

- Strong perception of conflict of interest
  - Eirgrid as TSO (including determination de-rating factors)
  - Eirgrid as owner of EWIC
- RAs (not TSOs) will determine Interconnector de-ratings
- Detailed methodology will be included in general consultation on de-rating
  - Planned for July 2016

Current Methodology Thoughts

- Transitional methodology to be used while historic data has limited utility
- Simple statistical model to estimate de-rating factors based on relevant historic and forecast data for I-SEM and GB
- Estimates checked against recent stress events

Secondary Trading

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Key issues

- **The case for secondary trading**: Should secondary trading be allowed?
- **Secondary trading market place**: Mandated central platform or not?
- **Limits on secondary purchasing:** Greater than in primary market?
- **Limits on secondary trading timeframes:** A number of issues in relation to the secondary trading timeframes.
- **Secondary trading and application of stop-loss limits:** how to apply stop loss limits?

Secondary Trading – Overview

Clear benefits to secondary trading exist:

- Efficient outage management

Implementation has two parts:

- Central register to log:
  - Who is responsible for RO rights and obligations,
  - How responsibility changes over time
- Venue(s) where trades take place

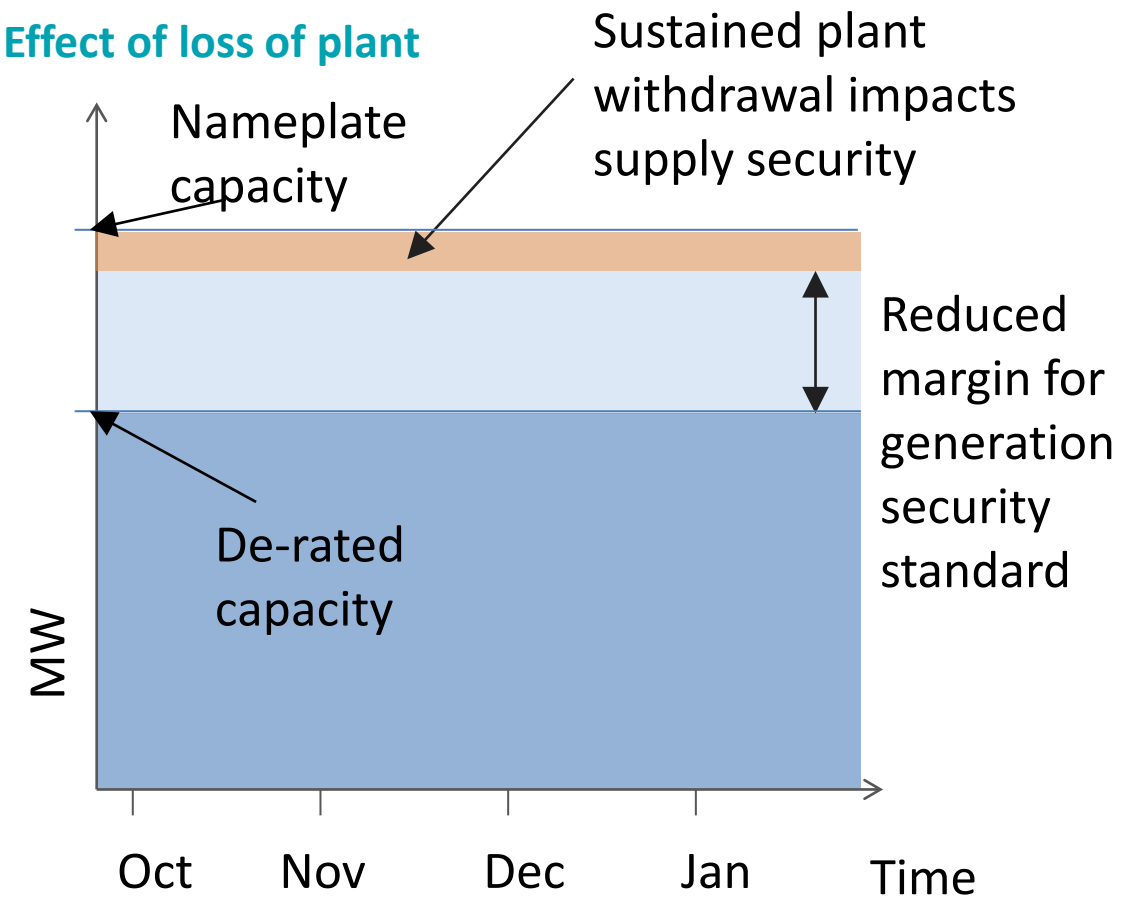
Market power drives decisions on venue

- Price transparency
- Access to counterparts

Summary of Secondary Trading Emerging Thinking

Market type	• A mandatory centralised marketplace based on a bulletin board, opening soon after auction results to trade custom products
Traded volume limits	• Trades to access capacity between de-rating and nameplate permitted for legitimate technical reasons • Plant must be qualified
Timeframe restriction	• No facility provided in initial implementation for pre-commissioning or ex-post trading in order to limit complexity
Stop-loss limits	• Stop-loss limits to remain with selling units, rather than transferring to buying party
Market Power	• Single Venue → Access & Transparency • REMIT • Oblige dominant players to trade outages and to treat with others

Trading up to nameplate capacity allows the system to avoid over-purchasing



- Flag when trades are for technical reasons
- Limit usage to 6 weeks per annum
- Monitor outliers in usage of “technical” facility
- Market abuse and usage for non technical reasons

Potential Fallback

Emerging thinking includes a "fallback" in case it is not possible to establish a venue for go-live

- Fallback "suspends" rights and obligations under an RO during planned outages
- Fallback can be implemented using a virtual participant
  - All plant outages in T-1 can be traded to the virtual participant
  - Virtual participant is a large and perfectly behaved DSU (so does not make difference payments)
  - Option fees paid to the virtual participant held by the SEMO, and used to offset future Supplier charges
- Only usable during Grid Code Planned Outages, with additional care to prevent abuse of this facility

Administered Scarcity Pricing

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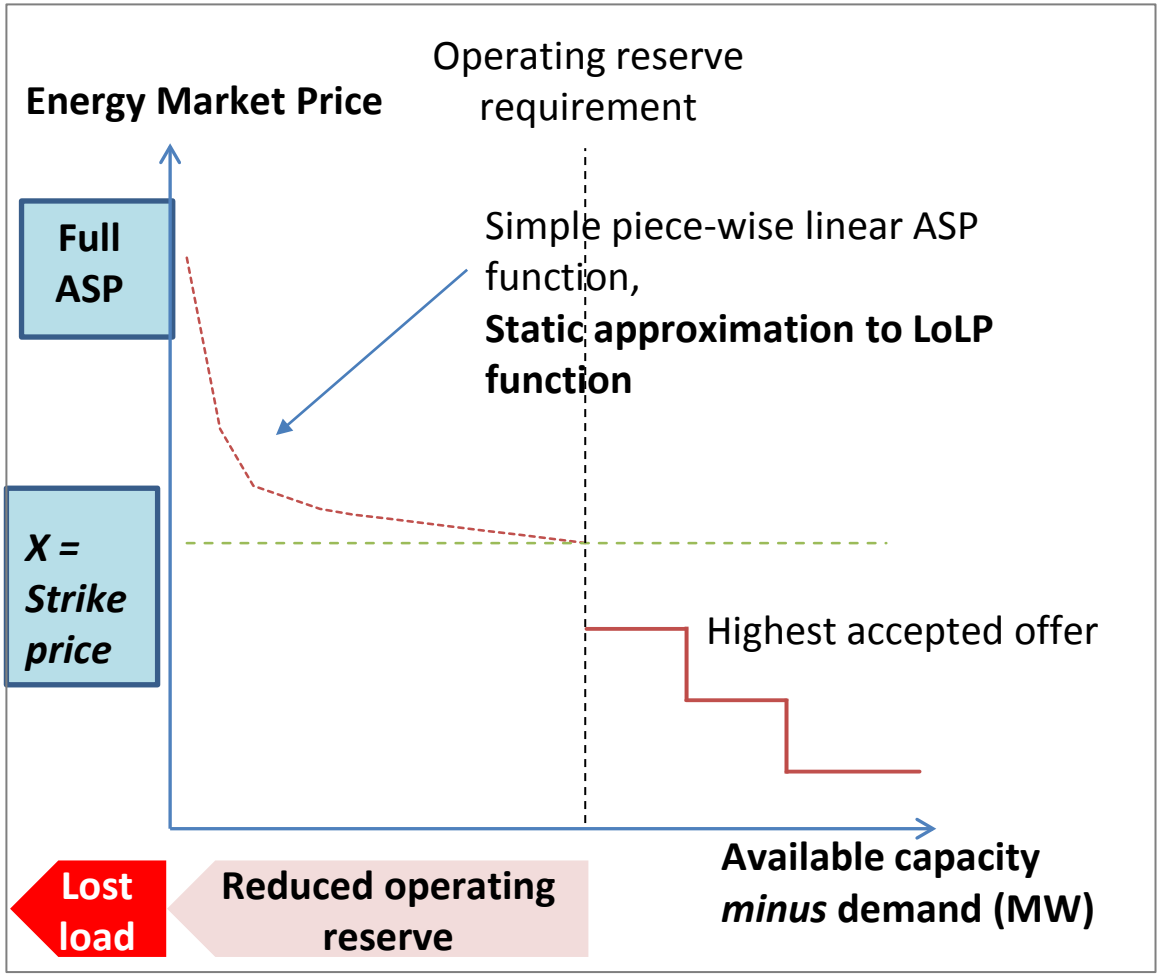
Administered Scarcity Price

Parameterised ASP function



- What are the actual price levels?
  - FASP
  - X
- What are the triggers?
  - Reduced Operating Reserve
  - Lost Load

What are the actual price levels?

Full ASP Level

- Initially set at the Euphemia day ahead price cap of €3,000/MWh
- Single step change to new pricing mechanism:
  - To a percentage of VoLL on ongoing basis
  - At end of transition period
- Further modelling to establish basis for setting the percentage of VoLL to be used
  - Impact on how quick "stop loss" used up
  - Impact on costs of socialisation

"X" (the lowest point on the ASP curve)

- This will be set to be at the strike price

What are the triggers?

Lost Load (i.e. Trigger for Full Administered Scarcity)

- Customer Voltage Reduction
- Planned or emergency manual disconnection
- Automatic load shedding
- (or equivalent events)

Reduced Operating Reserve (i.e. start for ASP)

- POR + SOR + TOR1 + TOR2 cannot be restored using RRD+RRS+RM1

Grid Code Review?

- Ideally Grid Codes need review to ensure triggers and notifications are consistent and well-defined

Implementation Agreement

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Four key areas for Implementation Agreements

- Milestones
- Reporting requirements
- Termination conditions
- Performance Bond

Milestones suggested in consultation

- Obtaining of all necessary consents
- Substantial financial completion
- Commencement of construction works
- Mechanical completion
- Completion of network connection
- First energy to network
- Start of performance/acceptance testing
- Provisional acceptance/Completion of performance testing
- Substantial completion

Broad acceptance of these milestones
Substantial Completion will need to be redefined for DS3

Implementation Agreement

Milestones

As per consultation

Substantial Completion: 90% of ROQ

Minimum Completion: 50% of ROQ

Substantial Financial Completion: 18 months

Extend milestones for limited defined events

Reporting

Six monthly

Report prior to T-1 Auction:

- Independently verified
- Declares expected commissioning date
- Used to replace missing capacity

Termination

Failure to achieve Substantial Financial Completion

Failure to achieve Minimum Completion

Pre-qualification contained *material* misleading/false information

Partial termination for Minimum Completion

First year of RO terminated if "T-1 report" shows commission delayed beyond set date

No sterilisation of projects

Performance Bond

Starts at an initial value

Rises at Substantial Financial Completion

Rises again at T-1

Based on trade-off between barrier to entry and estimate of:

- Liquidated damages for consumers
- Delay LDs in EPC contract

Further modelling needed to tighten estimates

Review levels after auction(s)

Other Contract Design Decisions

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Other Contract Design Decision

- Definition of the Capacity Year
- Stop Loss Limits
- Option Fee Indexation

Definition of Capacity Year

- October to September Year
  - Ensures full stop loss limit available from start of winter season
  - Aligns with several other relevant years (e.g. Typical tariff years)

Other Contract Design Decision

- Definition of the Capacity Year
- Stop Loss Limits
- Option Fee Indexation

Stop Loss Limits

- Multiplier values hard to set objectively
- Annual Stop Loss Limit to be set at **1.5x** Annual Option Fee for all providers
- Pro-rated for partial year
- Stop Loss limit also set on Settlement Billing Period basis
- Billing Period Stop Loss Limit:
  - Set to ½ of the annual Stop Loss limit per billing period
  - Considering a mechanism such that billing period limit falls to stop incentives being lost (e.g. If we had 3 events in different billing periods)
- No daily or event Stop Loss limit
- Stop Loss limits subject to review based on experience
- Multipliers will be set for the period of the 'price fix'

Other Contract Design Decision

- Definition of the Capacity Year
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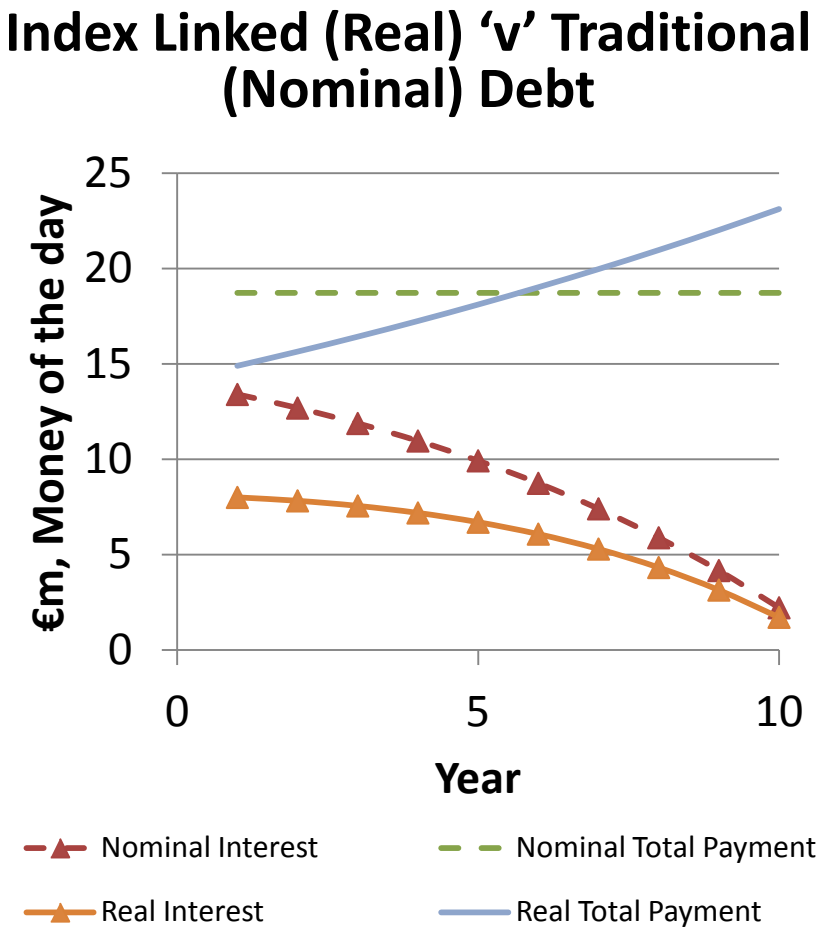
- Option Fee Indexation

Should option fee be indexed?



Option fees will *not* be indexed:

- Complicated to develop indexation across two countries
- Index linked debt not economically accessible for all developers
- Underlying costs may be based on other currencies (e.g. US$)