New Wholesale Single Electricity Market on the Island of Ireland

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Summary - New SEM

- Context, concept and design
- Initial Assessment – 2 months in
- Looking Forward
Challenges for Market Design

Peak demand of selected European markets

Challenges
- Small market
- Location – edge of Europe
Challenges for Market Design

**Generation capacity by owner**

**Challenges**
- Market Power
- Fuel prices driven by world markets
- Level of wind penetration

![Bar chart showing generation capacity by owner with categories such as ESB, AES, SSE, Viridian, Bord Gais, Tynagh, Bord na Mona, Aughinish, Other, with various energy sources like Gas, Coal, Wind, Oil, Peat, Pump Storage, Hydro, and Aggregated, plotted on a vertical axis representing Installed capacity (MW).]
Current Interconnection

- MOYLE: 500 MW
- EWIC: 500 MW
- BritNed: 1 GW
- IFA: 2 GW
Integration of Single Electricity Market

Key Drivers for redesign of the market

- Alignment of cross border trading arrangements within the region.
- Maximisation of use of interconnection capacity between NI/ROI and GB.
- Price convergence across the region.
- EU target model is a factor but not the single reason for redesigning the SEM.

Timely Review

- Increased interconnection capability – 80MW to 950MW.
- Changing generation mix - wind penetration.
- Greater potential for demand side participation.
The Energy Trilemma

THE NEW SEM

Energy Trading Arrangements

ETA

DS3

Delivery of Secure, Sustainable System

CRM

Capacity Remuneration Mechanism
Energy Market Revenues

Old SEM

- Long term hedging:
  - Within Zone = Financial (CfDs)
  - Cross Border (PTRs)

- No Day-Ahead Market
  - Cost minimization algorithm

- Intra-Day
  - Only two gate closures

- Balancing and Dispatch
  - Ancillary services

New SEM

- Forward Market
  - CfDs & FTRs

- Day Ahead Market

- Intra Day Market
  - Continuous Trading
  - 2 I-SEM - GB Auctions
  - 1 I-SEM only Auction

- Balancing Market
Capacity Market - Objectives

➢ **Key focus is on ensuring Security of Supply**
  ▪ Will provide signals for entry and exit of plant

➢ **Needed to address ‘missing money’ issue**
  ▪ High levels of zero marginal cost renewables leads to:
    ▪ Lower energy prices; lower plant utilisation; more price volatility
    ▪ Issue compounded by having a small market that is loosely interconnected
    ▪ Tolerance to high prices and price caps

➢ **CRM based on Reliability Options**
  ▪ Addresses this issue and provides investment certainty
  ▪ Provides an incentive to deliver capacity when needed
  ▪ Provides consumer protection from high prices
Capacity Auction Timetable

T-1 Auction Dec 2017 To cover Oct 2018 – Sept 2019

T-1 Auction Dec* 2018 To cover Oct 2019 – Sept 2020

T-4 Auction March* 2019 To cover Oct 2022 – Sept 2023

* Timeline subject to approval and publication by SEM Committee.
All-island capacity auction results

**Competitive auction process results in annual consumer savings of £200m (£50m for NI)**

Post auction there were separate jurisdiction analyses conducted to establish any additional locational requirements e.g. blackstart, transmission constraints.

<table>
<thead>
<tr>
<th>Region</th>
<th>Peak Demand</th>
<th>Capacity Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROI</td>
<td>7100MW</td>
<td>7420MW</td>
</tr>
<tr>
<td>NI</td>
<td>1760MW</td>
<td>2404MW</td>
</tr>
<tr>
<td>Total All-island</td>
<td>8860MW</td>
<td>9824MW</td>
</tr>
</tbody>
</table>
Purpose of System Services/DS3 revenue

- To value units which can provide necessary services to support stable and reliable system, particularly in context of increasing levels of wind penetration
- Values flexibility and pays for necessary services

Managed Exit - Grid Code Requirements

- Require 3 year notice period for units >50MW
- Derogations can be sought from regulators
- Transmission System Operators assessment of system informs regulatory decisions
INITIAL ASSESSMENT OF ENERGY TRADING
Average Ex-Ante Auction Prices

- Average DAM Price: €69.31/MWh
- Average IDA1 Price: €67.30/MWh
- Average IDA2 Price: €79.72/MWh
- Average IDA3 Price: €72.95/MWh
Ex Ante Volumes
Ex Ante Value (Nov 1\textsuperscript{st} to 26\textsuperscript{th})
I-SEM Prices, GB Prices & IC Flows (MOYLE)

GB-NI / NI-GB Trading (1/11 – 15/11)

- NI-GB Import
- GB-NI Import
- I-SEM Price
- Betta Price
Moyle Flows Pre-ISEM:

Flow GB to SEM
SEM Prices Lower

Flow GB to SEM
SEM Prices Higher

Flow SEM to GB
SEM Prices Lower

Flow SEM to GB
SEM Prices Higher
Interconnector Flows/Market Price Differences
Imbalance Pricing & Net Imbalance Volume
Fuel Mix of Ex-Post Market

➢ Coal units are only major change in market fuel mix
➢ Additional traders representing drop in wind traded in old arrangements
SEM Positive outcomes

Effective and Efficient Market

Benefits of I-SEM

Supporting Security of supply

Supporting competition

Increased integration of renewables

Downward pressure on bills

High Level Distribution of Revenues

Ancillary Services

More competitive mechanism to reward capacity.

Capacity Payments

Optimal use of cross border capacity.

Energy Payments

Price Making Demand

Additional Services being procured.

Increased integration of renewables

Supporting competition

Benefits of I-SEM

Effective and Efficient Market

Downward pressure on bills
Looking Forward

• Balancing Market
  – System issues
  – Investigations
  – Design outcomes what we expected

• North/South Interconnector – major constraint

• T-4 Auctions / new investment / Locational Signals

• The Energy Transition / Future Scenarios / government policy