



# Market Systems Development Plan 4

## 2011-2013

March 2012  
(Version 1.0)

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**Distribution List**

Once authorised:

Name	Organisation
NIAUR	Northern Ireland Authority for Utility Regulation
Market Participants	All participants in the SEM
TSOs	EirGrid and SONI

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## INTRODUCTION

The Market Systems Development Plan (MSDP) is a licence requirement placed upon both SONI and EirGrid by NIAUR and CER respectively. This two year plan is produced and reviewed annually in accordance with Condition 16 of the SONI Licence, “Licence to act as SEM Operator” and in accordance with Condition 4 of the EirGrid Licence, “Market Operator Licence granted to EirGrid plc”.

This document is the fourth Market System Development Plan (MSDP) developed by SEMO for the period from 1<sup>st</sup> October 2011 to 30<sup>th</sup> September 2013. The plan identifies the issues that SEMO face in relation to the operation, administration and development of the Single Electricity Market (SEM).

The MSDP has been approved by NIAUR and is being published for Participants information.

## SCOPE OF PLAN

MSDP4 2011-2013 is designed to provide a view of upcoming activities in the market, in addition to the update on market changes. It provides a forward view of upcoming system requirements, as well as acknowledging future policies that will impact on the SEM. The content of the plan thus reflects this development of the SEM. The plan is accordingly structured with the following Sections:

**Section 1** aimed at providing a high level overview of SEM IT systems and illustrates the range of Central Market Systems that SEMO develop, maintain and support.

**Section 2** This section identifies work progressed and completed since MSDP3.

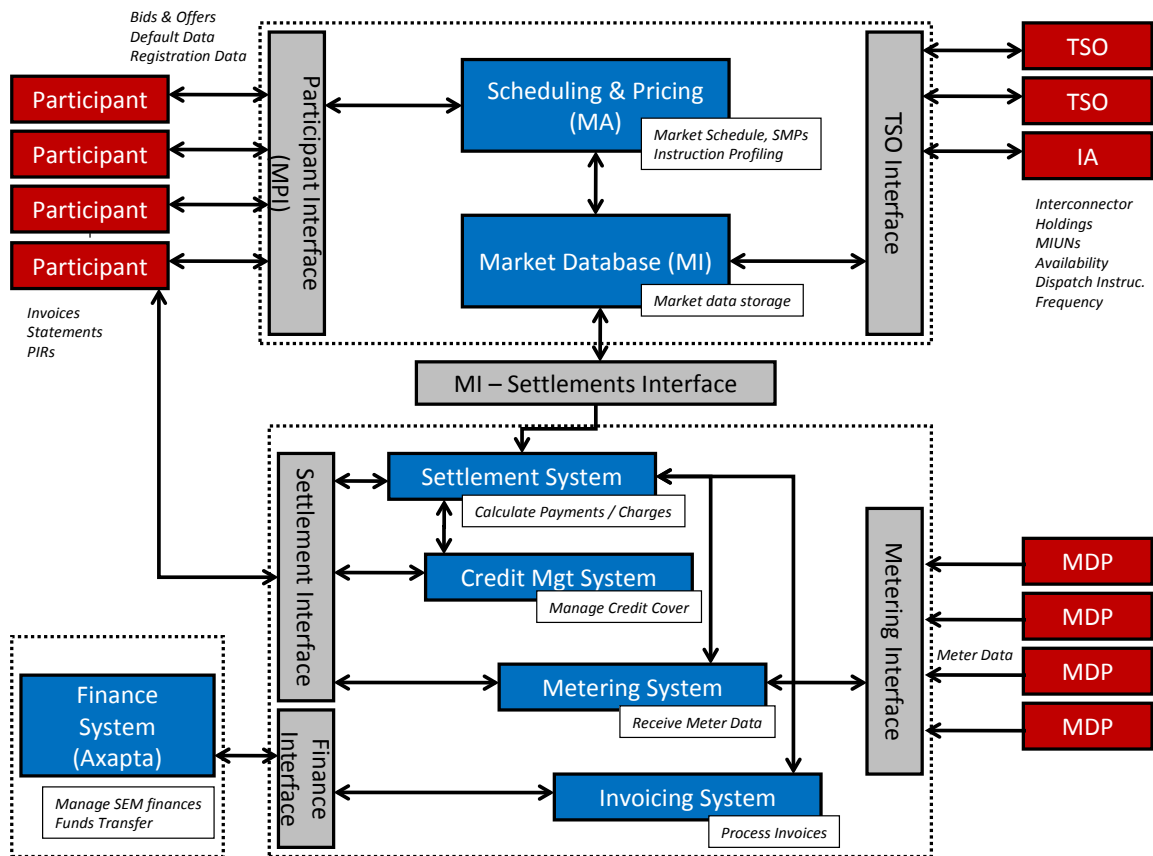
**Section 3** gives an update on the progress of the Intraday Trading Project and the content of the October 2012 Release.

**Section 4** highlights the forward work programme and gives a breakdown of the short, medium and long term market changes that may impact the Single Electricity Market over the next few years. This section outlines the work that SEMO are committed to fulfilling and identifies future areas for investigation.

**Section 5** relates specifically to IT projects under commitment or proposed. This section also provides an update on the progress of the Capital Programme approved in the SEMO Price Control.

**SECTION 1 - OVERVIEW OF SEM SYSTEMS / FUNCTIONAL ARCHITECTURE**

The purpose of this section is to provide a brief overview of the SEM Central Market Systems (CMS) that may be affected by the planned and potential developments that are outlined within this MSDP. In particular, this section provides a brief description of the key functionality contained within each of the core CMS subsystems. The following diagram outlines the functional elements of the CMS, along with the some of the key data feeds to the process.



**Diagram 1 – SEM Central Market Systems architecture**

*Market Infrastructure (MI) system*

The Market Infrastructure (MI) system is the main interface for Participants, Transmission System Operators (TSOs), Meter Data Providers and Interconnector Administrators (IAs). It provides communications through screens (Type 2) and through computer-to-computer interactions via Web Services (Type 3). It also provides

an interface to SEMO to allow monitoring, control and operation of the SEM. The main functions of the Central Market System are as follows:

- Registration – including registration of Participants, Users, Trading Sites, Units and Meters.
- Trading – the mechanism for submitting, revising and querying Default Offers and Normal Offers.
- Event Manager – schedules programs and events, so much of the SEM operation is automated.
- Report Manager – generates reports for Participants, SEMO, TSOs and IAs.
- Market Operator Interface – the interface used by SEMO to monitor, control and run the SEM.
- Interface to Other Systems – interfaces between CMS and with some External Data Providers.

#### *Scheduling and Pricing (MA)*

The Market Application (MA) system (which includes the MSP Software) performs the following key functions:

- Calculation of Market Schedule Quantities for Ex Ante, Indicative Ex Post and Initial Ex Post Market Schedules.
- Calculation of System Marginal Prices for Ex Ante, Indicative Ex Post and Initial Ex Post Runs.
- Calculation of Dispatch Quantities (using the Instruction Profiling module) for Ex Post Runs.

#### *Settlement System*

The CMS Settlements System calculates the amounts payable by or to be paid to Participants, in accordance with the provisions of the Code. In particular, this includes:

- Calculation of all payments and charges on a weekly (Billing Period) basis for Energy Settlement or monthly (Capacity Period) basis for Capacity Settlement.
- Management and reconciliation of currency costs incurred in the SEM for all payments and charges.
- Preparation of Invoice data for use in the Invoicing System.

#### *Invoicing System*

The Invoicing System manages the production of Invoices, which provide a summary of the amounts payable by or to Participants (including correct jurisdictional treatment of VAT and currency) for the relevant Billing Period or Capacity Period.

*Metering System*

The Metering System manages the receipt of meter reading data from Meter Data Providers (MDPs); logs receipt of data; and transfers meter data to the Settlement, MI or MA systems for use in further processes.

*Credit Risk Management System*

The Credit Risk Management (CRM) system manages Participant credit risk by evaluating their outstanding liability and a forecast of expected liability in the near future (this data is transferred from the Settlement System or Finance System). The calculated liability is matched with the total collateral posted by the Participant.

*Finance System*

The Finance System manages and monitors payments of Invoices and debtor information with respect to Participant liabilities within the SEM.

## SECTION 2 - PROGRESS SINCE MSDP3

The MSDP 3 (2009-2011) described the work plan for SEMO in terms of its market development (along with associated systems development) activities. In particular, the MSDP 3 covered the following areas of SEMO's work:

- Progress from the previous MSDP
- Biannual Release Strategy
- Forward Work Programme
- SEMO IT Projects
- SEM Design Service
- Participant Training
- SEMO Website

Since the publication of MSDP 3, SEMO have progressed over a hundred modifications. Some of the main modifications during this period included:

1. The **Intraday Trading** Modification (Mod\_18\_10) which will ensure that the SEM complies with the Congestion Management Guidelines.
2. The **Dual Rated** Generator amendment (Mod\_34\_08) which allows a generator use more than one fuel type.
3. The Validation of **Technical Offer Data** (Mod\_47\_08).
4. **Global Settlement** (Mod\_34\_09) which facilitated of the calculation of the Error Supplier Unit.

The table below gives a breakdown of modifications that SEMO have worked on since MSDP3. [Appendix 1](#) lists all of these modifications along with a high level description of each Modification.

Modification Status	Number
Implemented	64
Approved not Implemented	7
In Progress	15
Withdrawn	8
Rejected	8
<b>Total</b>	<b>102</b>

**Table 1** Modification progress since MSDP3



### SECTION 3 - FORTHCOMING MARKET RELEASES

For each of the planned releases to date, SEMO has communicated with the industry regarding the scope and likely impact. This has included providing detailed information on each release to allow Market Participants to design, plan and implement any changes necessary to their systems. The following two sections provide a brief overview of the July 2012 (Intraday Trading) and October 2012 system releases.

#### JULY 2012 INTRADAY TRADING

Modification Proposal [Mod 18 10](#) Intra-Day Trading (IDT) was approved for implementation by the SEMC on March 4<sup>th</sup> 2011 with a target implementation of mid-2012. The implementation of Intra-Day Trading arrangements in the SEM will require extensive changes to the Central Market Systems (CMS) which will result in changes to:

- interfaces between the CMS and Participant Systems; and
- the Operational timeline of the SEM.

The IDT project is a significant change to the SEM and SEMO has established the following work streams to deliver the project to the timeline stipulated in the SEMC approval:

- Modification Development;
- Systems Implementation; and
- Operational Readiness.

SEMO is mindful that clear and effective communication is a key factor to the successful implementation of Intra-Day Trading arrangements in the SEM. Consequently, SEMO has implemented a comprehensive Participant Engagement Plan to ensure Participants:

- are kept fully informed on project progress;
- have the necessary information to align their own systems development effort;
- understand the changes to the market rules (T&SC); and
- are fully informed of the operational impact of IDT.

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#### RELEASE CONTENT

##### **Release SEM R2.0.0** (Proposed Deployment: 20<sup>th</sup> July 2012)

The following Change Requests have been approved for implementation in the SEM R2.0.0 release:

SEM R2.0.0 Change Requests			
Ref.	Mod. Ref	Sub-System	Description
SEM_PC_CR222	18_10	All	Intra-Day Trading
SEM_PC_CR244		MA	SO Security (Option 1)
SEM_PC_CR256	43_10	MA	VPTG and Firm Access
CR284			Alignment to High Level Design
CR287			Inclusion of Breach Amount in the Credit Risk Report

**Table 2** Release 2.0 content

The key project milestones are detailed in the table below.

Milestone	Schedule	Status
Detailed Requirements	Dec 1, 2010 – Apr 30, 2011	Complete
Vendor Detailed Design	May 1, 2011 – Jul 29, 2011	Complete
Participant Systems Impact Workshop	Aug 3, 2011	Complete
Design Deliverables Issued to Participants	Aug 29, 2011	Complete
Participant Engagement Plan published	Sep 9, 2011	Complete
Participant Systems Design Workshops	Sep 28, Oct 5, 2011	Complete
Vendor Implementation	June 20, 2011 – Nov 11, 2011	Complete
Factory Testing	Nov 14, 2011 – Dec 23, 2011	Complete
System Integration Testing	Jan 3, 2012 – Apr 27, 2012	In Progress
Market Trial	Apr 30, 2012 – Jul 6, 2012	
Deployment	Jul 20, 2012	

**Table 3** Intraday Trading Project milestones

A series of workshops were held in both Dublin and Belfast to inform Market Participants of the impact on systems and processes due to the implementation of Intra-Day Trading arrangements in the SEM. During these workshops detailed discussions were held with Market Participants regarding the project schedule.

On August 29<sup>th</sup> the Market Participant Update Document (MPUD) was published. This is a key document to assist Market Participants in building and aligning their systems to interface with the SEM R2.0.0 Central Market Systems release. This document has been reengineered, based on Participant feedback from earlier in 2011, in an effort to make it more intuitive and user-friendly.

On September 9<sup>th</sup>, SEMO published the SEM R2.0.0 Participant Engagement Plan to ensure an efficient and effective communications framework is in place for the duration of the project. This framework covers all communications streams relevant to

the project and has been developed to ensure all audience types (Project Management, end user etc.) are catered for. The Factory Test phase of the project was completed on schedule on December 23<sup>rd</sup>. The System Integration Test phase is on schedule to complete on April 27<sup>th</sup>.

The Market Trial phase of the project has its own dedicated communications plan which will be consulted on with all Stakeholders in the run-in to Market Trial execution. Workshops will be held with the various stakeholders and a clear approach, scope and execution schedule will be published by SEMO in advance of Market Trial commencement.

More information on the Intraday Trading project can be found on the following link on the SEM website [Intraday Trading Web Page](#).

OCTOBER 2012 RELEASE

This section provides an overview of the approved changes (Modification Proposals and SDS sourced Change Requests) for implementation in the October 2012 release (SEM R2.1.0) to the Central Market Systems (CMS). Formal approval for the final release scope was received from the Regulatory Authorities in early February.

The content and scope of the October release will impact on interfaces between the CMS and Market Participant systems. To support this release, SEMO intends to put in place the necessary communication framework to give maximum visibility and optimum engagement with stakeholders. The release scope is outlined in the table below.

CR or MOD ID	Change Request/Modification Description
<b>CR207</b> <i>Automation of FMOc calculation</i>	Currently the SEMO Controllers calculate the FMOc charge off line and import already calculated values into Settlements using the Manual Line Item Import. This Change Request will enable the FMOc calculation to be automated in Settlements.
<b>Mod_40_10</b> <i>Dwell Times While Ramping</i>	Differentiation between Dwell Times and Dwell Time Quantities while ramping up and ramping down.  This lack of differentiation between a Dwell Up Time/Dwell Down Time and Dwell Time Up Quantity/Dwell Time Down Quantity, limits the ability of the MSP software to accurately capture the behaviour of certain generators. With current practices, if certain units only need dwell times for ramping up, they are forced to have a very low ramp up rate to accommodate this. This has lead to the situation where a unit which would require two dwell times and two ramp rates would need six ramp rates to accommodate their performance.
<b>Mod_42_10</b> <i>Single Ramp Rate</i>	Changes to the Single Ramp Up Rate and the Single Ramp Down Rate Calculation. At present, the method used to calculate the Single Ramp Up and Down Rates in SEM results in values that fluctuate considerably from one Trading Day to the next and are

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	not always a valid representation of the actual capabilities of the unit.
<b>Mod_01_11</b> <i>Changes to UNIMP for Over-Generation</i>	At present when a generator incurs an uninstructed imbalance for over generation, the payment received is based upon the minimum of SMP and Dispatch Offer Price. With this methodology, compensation for Over Generation for plant which is constrained on can be significantly lower than the unit’s cost. This arises because a generator that is constrained on has, in some cases, a DOPuh that far exceeds the SMP, yet it is only paid SMP for the over-generation. This change will address this by making the relevant changes to the UNIMP formulation.
<b>Mod_06_11</b> <i>SRA Cancellation through the MPI</i>	Currently, Market Participants cannot revise Settlement Reallocations - they can only submit additional ones. Only the Market Operator may cancel a Settlement Reallocation using the Settlement Reallocation screen in the MOI. This change will allow for the cancellation of SRAs directly by Participants through the MPI.
<b>CR260</b> <i>Additional MI-AMP Feed</i>	As part of the implementation of Intra-Day Trading in the SEM, discussions surrounding concepts of “Use It or Lose It – UIOLI” and “Use It or Sell It – UIOSI” have been held. In order to provide data required by the Interconnector Owners in the SEM, an additional data feed from the Central Market Systems is required following each EA2 and WD[x] MSP Software Run and will contain Implicit Auction Results (by Trading Period).
<b>CR261</b> <i>Removal of Orphan Trading Site Settlement Points</i>	In the POMAX settlements system, different types of units are categorised as settlement points. When new units are created in the MPI registration system, corresponding settlement points are created in the settlements system. When a unit is deregistered, it is end-dated with the relevant date but the Settlements system does not allow the settlement point to be start-dated and end-dated on the same date. In this way, once a new settlement point is created with an effective date, it cannot be deleted only altered for a later date. This leads to a duplication of trading site settlement points and causes errors in the settlements process.
<b>CR266</b> <i>Change of Effective Date in the MPI</i>	This Change Request will allow the Market Operator to push out / change a Market Effective Date which has already been submitted in the Market Participant Interface (MPI) with a record status set to “Accept”.
<b>CR267</b> <i>Wind and Load Forecast Data</i>	In the Market Application\Ex-Ante Sequence if entries for Wind or Load forecast data are missing, the DSI will automatically set the value to the same as the previous trading period.
<b>Mod_10_11</b> <i>Interconnector Under Test</i>	Currently, it is not possible for an Interconnector to go under test in the SEM. The EWIC Interconnector will be commissioned in 2012 and as part of its commissioning it will undergo testing for a number of weeks. This change request will allow an Interconnector to be designated under test for a range of trading dates and the associated charges applied. Currently, interconnector related charges are charged to the Interconnector Administrator via the Interconnector Error Unit and this is expected to continue.
<b>Mod_12_11</b> <i>Interconnector Losses</i>	Current Transmission Loss Adjustment factors (TLAF) for Interconnectors are based on the point of connection in SEM jurisdictions, plus an allowance for losses on the Interconnectors to the Connection Point (noting that DLAF for Interconnectors is equal to one). Adjustment for losses reflects the transfer of electricity between the Interconnector Data Submission Point of a Unit and the Trading Boundary, with TLAFs calculated based on the expected predominant direction of flow for the Interconnector (i.e. importing). This treatment when exporting is incorrect, as it does not reflect the fact that (if the loss factor is calculated to be <1), Interconnector Users seeking to export electricity would need to purchase more at the Trading Boundary than would be

	<p>delivered to BETTA.</p> <p>This Change Request involves a change to the process by which quantities for Interconnector Units, Interconnector Error Units, and Interconnector Residual Capacity Units are adjusted by the Combined Loss Adjustment Factor (CLAF). This involves adjusting quantities for affected Units when exporting (i.e. quantity is less than zero) by the reciprocal of the CLAF provided by the System Operator to the Market Operator:</p> <ul style="list-style-type: none"> <li>• If the relevant quantity (e.g. MSQ, DQ, MG) is greater than or equal to zero (i.e. importing), there is no change to the existing calculation.</li> <li>• If the relevant quantity (e.g. MSQ, DQ, MG) is less than zero (i.e. exporting), the loss adjustment is by (1/CLAF).</li> </ul>
<p><b>Mod_21_11</b> <i>UI Payments for ELUs constrained on</i></p>	<p>When an Energy Limited generator incurs an uninstructed imbalance for over-generation, the payment received is based upon the minimum of SMP and Dispatch Offer Price. As Energy limited plants must have a DOP = €0, this means that there is no payment possible for over-generation. This change will result in Energy Limited Generators being paid based on SMP for over-generation that occurs within the tolerance bands.</p>
<p><b>CR286</b> <i>Publication of Zero IUNs when no PQ Pairs available</i></p>	<p>The change requested is that IUNs calculated by the MSP software for all valid Participants on each Interconnector default to zero. This will ensure that IUNs are always published for every Trading Day.</p>

**Table 4** Content of the October 2012 Release.

APRIL 2013 RELEASE

This section provides an overview of the changes (Modification Proposals) approved to date for implementation in the April 2013 release (SEM R2.2.0) to the Central Market Systems (CMS).

CR or MOD ID	Change Request/Modification Description
<b>Mod_17_11</b> <i>Clarifying the requirement to provide Dispatch Instructions for Generator Units.</i>	This Modification Proposal seeks to have Dispatch Instructions relating to Autonomous Generator Units published by SEMO.

**Table 5** Provisional content of the April 2013 Release.

The release cut-off date for the SEM R2.2.0 release is Friday June 22<sup>nd</sup> 2012.

## SECTION 4 - FORWARD WORK PROGRAMME

In the next few years, a number of significant market changes will be developed and implemented in the SEM. Many of these changes are policy-led, which SEMO recognises will fall primarily under the remit of the Regulatory Authorities. SEMO is also aware of the important policy initiatives currently under consideration (as defined by European legislation) and the respective forward work programs of the Governmental Departments and Regulatory Authorities. These activities clearly relate to some of the most complex and multi-faceted aspects of SEM, supported by highly detailed rules and complex systems. SEMO (as a key organisation linking policies outlined by RA decisions with day-to-day operation of the market) will therefore need to undertake significant analysis to determine the most suitable and cost effective way of supporting development in these areas.

In addition to policy-led changes, SEMO continues to be involved in many issues and proposed changes raised through the auspices of the Modifications Committee. Indeed, SEMO is also continually working to identify ways in which the CMS could be developed in future to deliver more efficient, transparent, accurate and timely services to the SEM as a whole.

### EU MARKET INTEGRATION

The European Commission's energy strategy in the period to 2020 is structured around the building a pan-European integrated energy market. The Commission must ensure the implementation of legislation to allow the free movement of energy using the internal market. To do so, it intends to establish a blueprint of the European infrastructure for 2020-2030 concerning the development of the European Network of Transmission System Operators for electricity (ENTSO for electricity).

The internal market must also undergo streamlining of permit procedures and market rules for infrastructure developments. To this end, the Agency for the Cooperation of Energy Regulators (ACER) is responsible for defining and implementing the harmonisation and standardisation requirements.

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### INTRA-DAY TRADING

In order to enhance cross-border trading arrangements, facilitate closer to real time trading and to comply with relevant guidelines, notably the Congestion Management Guidelines, SEMO is in the process of implementing the High Level Design as agreed with the SEM Committee and the Market Participants in early 2011. This High Level

Design was arrived at through months of intensive engagement with industry and the RAs over the course of 2010.

With EWIC coming online in 2012, the interconnection between SEM and BETTA is set to increase to 1000MW. Making the best use of this requires arrangements that remove barriers from cross border trading.

This project is seen as the first step of the wider Market Integration project and is necessary to carry out first as compliance with Congestion Management Guidelines is mandatory from the end of 2012.

The design utilises the existing SEM structure adding two further gate closures in advance and during the Trading Day. In addition, it is not necessary to explicitly purchase interconnector capacity to carry out an interconnector trade in these Trading Windows. Capacity that is not used in the previous run will be released and is allocated implicitly based on the most economic energy offers submitted.

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#### SEM MARKET INTEGRATION PROJECT

ACER, the Association for the Cooperation of Energy Regulators, published the Framework Guidelines on Capacity Allocation and Congestion Management (FG CACM). This is a significant milestone in the development of the Internal Energy Market. It will require SEM to harmonise its arrangements for allocation of cross border capacity with all other EU regional markets. The ultimate aim of this process is market coupling and the establishment, where there is no congestion, of a single wholesale price for electricity at the day ahead stage.

It places requirements on all cross border trades to be coordinated through implicit auctions via a single price coupling algorithm at the day ahead stage and through continuous implicit trading at the intraday stage. It will require significant changes to the SEM.

With this in mind, the SEM Committee in line with its commitments at the France-UK-Ireland (FUI) Regional Initiative established a north south project team-to provide the SEM Committee with a suite of possible options that it could pursue to meet the 2014 transitional timelines and the 2016 full compliance timelines.

Following the implementation of Intraday Trading in summer 2012, the implementation of any transition measures by 2014 and the enduring solution by 2016 is likely to be a major component of SEMOs development work as we move forward.



## SECURE, SUSTAINABLE POWER SYSTEM

EirGrid and SONI have carried out substantial studies and analysis in the area of sustainable power systems over the past number of years, including the Facilitation of Renewables studies completed last year. More recently, the TSOs have carried out comprehensive analysis of the long term needs of the power system in the context of a changing plant portfolio which contains significant levels of variable renewable generation.

The key message from this analysis and previous studies is that the 2020 renewables targets are achievable; however, significant work is required to manage the integration of very high levels of instantaneous renewable penetration on the island. The main operational areas that need to be addressed are the management of the system frequency, balancing the system in real time, managing system voltage and ensuring the compliance of plant with the Grid Code requirements.

To manage this work over the coming years, EirGrid and SONI have established a program of work entitled the “Program for a Secure Sustainable Power System”. This work program includes enhancing the monitoring of portfolio performance, developing new operational policies and system tools to efficiently use the plant portfolio to the best of its capabilities, and regularly reviewing the needs of the system as the portfolio capability evolves.

A key part of the program will include a review of ancillary services and associated payments. SEMO as Market Operator will provide expertise as required in relation the SEM to ensure that any future developments in this regard are complimentary and consistent with the evolving SEM design.

## DEMAND SIDE PARTICIPATION

The SEM has always had an objective to facilitate Demand Side Participation; however, to date there has been limited activity in this area. Following the decision on the Demand Side Vision for 2020 by the SEM Committee in May 2011, a number of actions were set out that may involve changes to the current arrangements in the SEM and the associated systems. These actions include:

- The SEM Committee will ensure that consideration is given in any modification to the Trading and Settlement Code to introduce firm day ahead pricing in the SEM allowing the support of demand side participation. Demand side participation in the market will be integrated as a key driver into the project going forward.

This consideration is also relevant to aligning SEM with the Target Model for day ahead price coupling. Changes to deliver a day ahead price may be captured as part of this work on Market Integration.

- The SEM Committee will write to the T&SC Modifications Committee Chair asking it to consider any barriers to DSM identified through current modifications and to consider the implications for demand side participation in relevant future modifications brought before the T&SC Modifications Committee. The T&SC Modifications Committee will be required to report back to the SEMC.
- The SEM Committee will write to the T&SC Modifications Committee and Grid Code Committee Chairs asking them to consider any barriers facing distributed generators and/or other measures to facilitate participation from distributed generation. The T&SC Modifications Committee and Grid Code Committee will be required to report back to the SEM Committee.

SEMO is currently engaged with prospective Demand Side Units and Aggregated Generator Units with a view to facilitating their entrance into the SEM. Working with our SO colleagues, SEMO has provided and will continue to provide the necessary market expertise to support any appropriate changes to SEM that remove barriers to entry and greater participation of Demand Side and Aggregated Generation in the SEM.

- The SEM Committee will request that the TSOs undertake a review covering payments for system wide storage and provide recommendations to the SEM Committee.

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## ENERGY STORAGE

Similar to Demand Side Units, SEMO is engaged with current and potential future market Participants on enhancements to current rules for Pumped Storage and possible additional rules for other types of storage e.g. Compressed Air Energy Storage. When SEM was designed the current rules were based largely on the existing storage facility at Turlough Hill; however, as there are a number of potential storage developments under consideration, SEMO will continue to work with the relevant organisations to ensure that SEM facilitates additional pumped hydro storage and other varieties of storage.

#### LOCATIONAL SIGNALS

There is currently one Modification pending implementation in relation to losses on Interconnectors. The enduring solution for losses in SEM whether the current compressed loss factors policy is retained or there is a move to uniform loss factors, SEMO will have to ensure that any change can be accommodated by the current systems and where not make the necessary changes as appropriate. A key consideration here is the policy for losses on interconnectors.

#### CONTINUAL INCREMENTAL IMPROVEMENT IN THE SEM

The SEM is continually evolving to ensure that it continues to meet the needs of an increasingly diverse set of Market Participants. In addition to the more substantial changes, it is important that there is a process for facilitating smaller enhancements of the SEM.

This change is achieved through the ongoing work of the Trading & Settlement Code Modifications Panel. The effective development and implementation of rules requires that all proposals are impact assessed to ensure that there are no unintended consequences. This enables the Modifications Committee and in turn the SEM Committee to be able to make an informed decision on these matters. Once approved, SEMO implements the change at the next available release date.

## SECTION 5 - SEMO PRICE CONTROL CAPITAL PROGRAM UPDATE

The section provides an update of the seventeen business cases which address the likes of IT infrastructure requirements, the need for additional operational support systems, reporting requirements, data storage, system monitoring tools etc. The progress of each business case can be viewed in table below. Detail as to the progress of each capital project is provided in the [Appendix 2](#).

No	Predictable Capex Item	Note/Benefit	Delivery Date
1	Hardware Upgrade	Three year Delivery timeline.	<b>Phase 1</b> October 2011
2	System Monitoring Reporting	This proactive system will help significantly reduce the time it takes to find and clear system faults.	<b>Design Phase</b> - December 2011. <b>Ordering and Commissioning</b> - January 2012 <b>Go live date</b> in the June/July 2012.
3	Systems Management	This system will help facilitate Patch Management, Code Releases, centralised software server updates and will help the more efficient utilisation of IT infrastructure resources.	<b>Design</b> - December 2011. <b>Ordering and Commissioning</b> - January 2012 <b>Go live date</b> in the June/July 2012 timeframe.
4	Virtualisation	This project virtualises all of the SEMO non production environments. Phase 2 will tackle the virtualisation of SEMO's Corporate systems but excluding the Central Market Systems.	<b>Phase 1 Virtualisation of non production environments</b> is due to be delivered by December 2011. <b>Phase 2 Virtualisation of Corporate systems</b> is due Quarter 1 2013
5	Oracle Logging	Auditor recommendation for security logging.	<b>Design Phase</b> - Quarter 1 2012 <b>Delivery date</b> - July 2012.
6	SharePoint and Document Management	Facilitates the storage, organisation and sharing of documents within SEMO	<b>Phase 1</b> Storage of Processes, Work Procedures and Checklist templates, Compliance Register.
7	Data Storage	Relieves data storage problems and reduces costs.	<b>Phase 1 Database Partitioning</b> - November 2011. <b>Phase 2 Database Archiving</b> - December 2011 <b>Phase 3 File Storage Management</b>
8	Data Warehouse	This will provide SEMO with enhanced capacity for carrying out detailed market analysis.	<b>Phase 1 Infrastructure</b> is due be delivered in July 2012 <b>Phase 2 Design and Procurement</b> phase is due to start Quarter 3 2012
9	Reporting Database Upgrade	This is now a business critical system which requires additional system support.	<b>Delivery date</b> - July 2012.
10	Oracle Database Server Version 2	The database is struggling to maintain acceptable performance and requires	<b>Phase 1 Delivery date</b> – New File system due July 2011.

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		significant maintenance.	<b>Phase 2</b> Upgrading to 11G and migrating to Linux July 2012
<b>11</b>	New Communications Links	Key infrastructure components providing fully redundant, consistently available high performance links	Not due until 2013
<b>12</b>	CMS Pre Production Environment (IPT)	Environments for investigating, testing and diagnosing issues in a timely and efficient manner.	<b>Delivery Jan 2012</b> The CMS Pre Production Environments will be commissioned and in place for January 2012
<b>13</b>	Axapta Upgrade	This system is used for reconciling bank accounts, processing cash receipts, maintaining market ledgers, managing collateral and bad debt and managing market currency exposure.	<b>Delivered</b> in May 2011. Further upgrades may be required.
<b>14</b>	On-Line Help System	This system will allow external stakeholders to submit and track any new or existing queries directly through a SEMO portal.	<b>Phase 1 Business requirements</b> SEMO are gathering the business requirements. The business requirement gathering stage is due to be completed by December 2011. <b>Phase 2 Delivery</b> is due Quarter 2 2012.
<b>15</b>	Electronic FAX Solution	Audit recommendation. The current manual processes for fax communications has the potential for error or omission, may not be timely enough, is difficult to co-ordinate across dual site operations, is open to security breaches, and does not provide auditable permanent records of incoming or outgoing communications.	<b>Phase 1 Business Specification and Design</b> The business specification for this project has been compiled and the design agreed. <b>Phase 2 Procurement and Delivery</b> SEMO are now in the procurement phase of this project. Delivery date Quarter 4 2012.
<b>16</b>	On-Line Registration System	The online registration system should decrease the workload for new participants entering the SEM and make the registration process less daunting and more transparent.	Delayed until year 3.
<b>17</b>	Training Environment (Internal)	It is essential that additional Market Application environments are made available to allow SEMO to optimally train staff and thus reduce the potential of operational issues in the live systems.	<b>Phase 1 Delivery</b> due July 2012.

**Table 6** – High level summary of the 17 Capital Projects

[Appendix 2](#) provides greater detail about the capital projects and their associated delivery dates.

## APPENDIX 1 MODIFICATIONS

- 1. Implemented*
- 2. Approved and not Implemented*
- 3. In Progress*
- 4. Withdrawn*
- 5. Rejected*

## Implemented Modifications

Mod ID	Modification Title	Description
MOD_02_11	DLAF application for Supplier Units	The System Operators have raised a number of issues (with the Regulatory Authorities and SEMO) in the past in respect of the provisions of the Code (including clause 4.40) in relation to the current application of Distribution Loss Adjustment Factors (DLAFs). As a result, the System Operators raised an Urgent Modification (43_08) which came into effect on 1st November 2008. As a result of this modification, wording was mistakenly removed from clause 4.40 although the affected parties continued to apply the required DLAF correctly. Therefore the proposed change is to reinsert 'or Supplier Unit' into this clause.
MOD_03_11	Housekeeping 3	The Modification sets out various corrections to numbering and formatting of various sections of the T&SC.
MOD_05_11	Extension to Role of the Modifications Committee via Working Groups	Three years of operational experience of the SEM Modifications process and specifically the operation of the process with the Intra-Day Modification Proposal, strongly indicates the need for an improved market change process. Some issues of significance to the SEM come from external sources (for example the Regional Market Initiative from Europe) or the ongoing evolution of the industry (such as Demand Side), which often stretch the boundaries currently mapped out for the Modification Committee. Issues that may eventually result in rules changes may initially start off as sketchy concepts with an individual or within an organisation. Such concepts would benefit from joint industry consideration to prove, improve or disprove prior to formalising market rules.
MOD_09_11	Drafting Errors in relation to the Generator Units shutting down	In the Trading Period prior to a Generator shutting down, the rules were initially set out so that it cannot be scheduled a level of Output greater than half the Single Ramp Down Rate. This is similar to the limit that a unit cannot come on to more than its Block Load plus half the Single Ramp Down Rate. This allows a unit to be off for Trading Period and back on in the next, taking half the off Trading Period to shutdown and the other half to start up. However, if a Generator Unit's Block Load plus half its Single Ramp Up Rate is less than its Min Stable Generation then an infeasibility would arise as the unit would be required to stay below its Min Stable Generation. Therefore, the max of the Min Stable Generation and half the Single Ramp Down Rate is used to avoid this as is set out in N.17.2 (f).
MOD_13_11	Inclusion of Other Systems Charges in the Imperfections Charge	As part of the AS Harmonisation Project, the SEM Committee decision paper, "Harmonised All-Island Ancillary Services Rates and Other System Charges" (SEM-10-001) stated the following in relation to netting Other System Charges from Dispatch Balancing Costs (DBC) when calculating the Imperfections Charge:  <i>"In the case of the other charges (i.e. Trips, SNDs and GPIs), the TUoS statement of charges will be used as a facilitating vehicle to impose and publish the charges annually. It is appropriate to net off these charges from the DBC. The DBC are partially incurred by generators having poor performance and behaviour. They are recovered in the SEM through an imperfections tariff levied on suppliers by the Single Electricity Market</i>

		<p><i>Operator (SEMO), which in turn is regulated by the RAs. For the avoidance of doubt the non-AS charges reduce the imperfections tariff and not the DBC themselves.”</i></p> <p>This Modification Proposal inserts the necessary terms into the TSC to allow for this netting process to occur.</p>
<b>MOD_15_11</b>	Amendment to Deload Break Point Glossary Definition	<p>This Modification Proposal provides clarification to the treatment of Deloading from Minimum Stable Generation to zero. The existing Glossary definition implies that a units first Deloading Rate (DLR1) occurs from Minimum Stable Generation to the Deload Break Point while the second Deloading Rate (DLR2) occurs from the Deload Break Point to zero. This modification proposes to correct the definition to reference that DLR2 reflects the rate of change from Minimum Stable Generation to the Deload Break Point while DLR1 in turn reflects the rate of change from Deload Break Point to zero.</p>
<b>Mod_20_11</b>	Reversal of Mod_07_09: SEMO Cash Pooling	<p>This Modification Proposal, proposed by SEMO, seeks to remove the changes to the Code that were approved through Mod_07_09, SEMO Cash Pooling. Mod_07_09 was approved in 2009 relating to the setting up of 'mirror' deposit accounts in National Irish Bank for the Pounds sterling accounts held in Northern Bank. The Danish government bank guarantee scheme did not cover Northern Bank as a result of it being a subsidiary of Danske Bank (National Irish Bank is a branch and so was covered by the guarantee). In order to allow the cash held in Northern Bank to be covered, it was agreed to set up 'mirror' accounts in National Irish Bank.</p> <p>There were a number of legal and tax issues that came out of this that resulted in the deposit accounts never having been set up. The banking guarantee of the Danish government has since expired and this Modification Proposal seeks to remove the obligation from the Code to set up these accounts. Non-compliance with this section of the Code has been raised as an issue in both the market audit report for 2009 and 2010 and also in the Code compliance audit.</p>
<b>Mod_22_11</b>	Housekeeping 4	<p>A number of minor drafting errors of various sections of the Code are presented in this proposal.</p>
<b>Mod_25_11</b>	Separate Residual Meter Volume Interval Proportions for each Jurisdiction	<p>The modification, proposed by the RAs, seeks to allow for different values of Residual Meter Volume Interval Proportion (RMVIP) to be used in each Currency Zone. The changes proposed by Mod_09_09 (Global Settlement) were implemented in the Code on 7<sup>th</sup> October 2010, and the necessary software changes were implemented as part of the Spring 2011 software release (1.9).</p> <p>It has been identified that the change to the Central Market Systems allows for the possibility that different values of the Residual Meter Volume Interval Proportion (RMVIP) should apply in each Jurisdiction. Although such a facility was not proposed as part of Mod_09_09 and was therefore not implemented by the SEM Committee in the changes to the Code, the RAs take the view that it would be prudent to amend the Code so that this facility could be used were it to be identified that separate values for RMVIP in each Currency Zone (jurisdiction) would be desirable.</p>



<b>Mod_26_11</b>	Process change for assessing Firm Access Quantity of Trading Site (FAQSst)	Certain registration data is validated by the System Operator as per Appendix H of the TSC prior to becoming effective in the market systems. One of these requirements is validation of the FAQst. The Firm Access Quantity of Trading Site (FAQSst) parameter will determine the level to which a generator unit can be scheduled in SEM. Currently the SO only has visibility of this at generating unit level as opposed to site level when validating the Generation Unit Data spreadsheet provided by SEMO. If this Modification is not implemented the validation of FAQ at site level may be applied incorrectly in the MSP software. This parameter has a material impact on the outcome of pricing and scheduling in SEM and an incorrect value may lead to incorrect MSQs and SMPs in SEM.
<b>Mod_28_11</b>	Alignment of AP11 with Bi-Annual Release Strategy	This Modification Proposal, proposed by SEMO adds the word 'timetabled' to indicate that Scheduled Releases are planned well in advance, removes an obligation to carry out Scheduled Releases on a quarterly basis, allows for the current bi-annual release strategy or other Release timetables as may arise and replaces 'system modifications' with 'system changes' to avoid confusion with Modifications Process. If not implemented AP11 will not reflect the current release strategy that applies to the Central Market Systems
<b>MOD_41_10</b>	Validation of Firm Access Quantity of Trading Site (FAQSst) by the System Operator	The Firm Access Quantity of Trading Site (FAQSst) parameter will determine the level to which a generator unit can be scheduled in SEM. As such, this parameter has a material impact on the outcome of pricing and scheduling in SEM and an incorrect value may lead to incorrect MSQs and SMPs in SEM. As the System Operator is responsible for all Connection Agreements to the Transmission System, it is appropriate for the System Operator to validate the Firm Access Quantity of Trading Site proposed for each Trading Site to ensure it reflects the Connection Agreement. EirGrid and SONI believe this modification can be implemented as a business process change.
<b>MOD_31_10</b>	Interconnector SEM connection point – Further extension of interim arrangements	This modification proposes to extend the interim arrangements where the remote end of an Interconnector is defined as the connection point to the SEM and the interim arrangements whereby Interconnector losses are dealt with by incorporating these into the Transmission Loss Adjustment Factor for the Interconnector.
<b>MOD_32_10</b>	Dual Rated Units Clarifications	This Modification provides clarification of the information required for Generator Units that are Dual Rated Units.
<b>MOD_33_10</b>	Unit Under Test Process	This Modification Proposal sets out in AP4 a clear set of steps for and the timings involved in a Generator Unit being granted Under Test status. In addition, the Modification Proposal changes the deadline by which the Generator Unit must submit a Generator Unit Under Test Notice from five Working Days before the test to two Working Days before the test. It also provides clarity to all parties regarding their obligations and the timelines associated with those obligations.
<b>MOD_34_10</b>	Clarification of the treatment of PQ Pairs for Interconnector Units	Following comments received after re-certification of the MSP Software during 2010, SEMO proposed a number of clarifications to the clauses defining how Price Quantity Pairs relating to Interconnectors should be interpreted.

<b>MOD_35_10</b>	Clarification of Technical Offer Data Requirements	This Modification removes obligations on the Market Operator regarding notification of acceptance of Validation Data Set Number. It also proposes various clarifications and adjustments to the data submission requirements relating to Registration Data (Appendix H) and Offer Data (Appendix I).
<b>MOD_39_10</b>	Change of ESU algebra from Section 7 to Section 4	To calculate the Error Supply Unit, there are two sets of algebra – the algebra set out in paragraph 7.12 has been in use since go-live. Currently Section 7.12 is in use; however it was intended that this interim measure would switch to the enduring algebra in Section 4.91 as this is the more efficient way of allocating losses on a jurisdictional basis.
<b>MOD_25_10</b>	Payment Period Currency Costs	This modification aims to clarify that it is the date on which an invoice is actually paid rather than the date on which it is due which is used in the calculation of the Payment Period Currency Cost.
<b>MOD_26_10</b>	Submission of alternative proposals	The Secretariat drafted a Modification Proposal to put a timeline in place for the submission of revisions of existing Modification Proposals. As revisions can often contain substantial changes from the original Modification Proposal, it was proposed that the existing timelines for new Modification Proposals be adopted for revisions. This will enable the Modifications Committee adequate time to review the changes proposed in the revision prior to the agenda being sent out five days later.
<b>MOD_27_10</b>	Housekeeping and Compliance	The Modification proposes corrections to numbering and formatting of various sections of the T&SC.
<b>MOD_28_10</b>	Clarification of treatment of Netting Generator Units	Currently, the drafting in the Code with respect to the provision of Technical Offer Data for Netting Generator Units is ambiguous. This clause is cited within a section titled “Demand Side Units”, whereas this clause relates to all Netting Generator Units (including those on Trading Sites where Generator Units are registered). Furthermore, the use of does not make clear where Netting Generator Units should be classified as Autonomous Generator Units.
<b>MOD_19_10</b>	Clarification of Limited Communication Failure	This modification aims to clarify that it is the responsibility of a Participant to ensure that their Digital Certificate is within date. It has arisen from recent Participant requests to accept Digital Certificate expiry as grounds for submission of a Limited Communication Failure request. Failure of Participants to renew their certificates and request Limited Communication Failure results in an adverse impact on SEMO operational resources and pricing publication timings may be impacted.
<b>MOD_20_10</b>	Setting a De Minimis Level on Letter of Credit Drawdown	The introduction of Resettlement has resulted in additional financial transactions within SEM and has resulted in the issue of quite often numerous Invoices which are very small in financial magnitude. Secondly, Resettlement has significantly added to the volume of Invoices issued to Participants on a weekly and monthly basis. Finally, Resettlement has impacted upon Generator Units which typically would be due to receive monies from SEM, but are now, due to resettled Invoices, often required to make payments to SEM. This modification formalises a more practical approach to the matter, which does not pose additional risk for the SEM. This process is reserved for circumstances in which SEM Financial Control is satisfied that

		there is a clear commitment from the Participant in question to pay the outstanding amount within the timeframe specified.
<b>MOD_21_10</b>	Clarification of Management of Taxes and VAT	This modification aims to clarify that the Management of Taxes and VAT section in Section 6 of the T&SC is a section in its own right. As currently written, the typeface of the heading implies that it is a subsection under IMPLEMENTATION OF ADMINISTERED SETTLEMENT, to which it is unrelated. Therefore this modification proposes to capitalise the MANAGEMENT OT TAXES AND VAT section title for clarity.
<b>MOD_22_10</b>	Timelines for EDP Data for Ad-hoc Resettlement	This modification clearly defines the ad-hoc resettlement timeline for each party involved in the process. i.e. 10 working days for the External Data Provider to successfully submit to the Market Operator the revised data, then 20 working days for the MO to plan in the resettlement (taking account of other timetabled activities), re-price, resettle and issue invoices.
<b>MOD_23_10</b>	No Requirement for RA notification of Part Registration	A minor Market Operator audit item was identified in 2009 whereby SEMO was not meeting its obligation under AP1 Section 3.1.2 Procedural Step 6 to "Notify Regulatory Authorities of receipt of notice" for Party application by fax. After discussion with the Regulatory Authorities, it was agreed that a notification via SEMO Monthly and Quarterly reports is sufficient for their purposes. No separate notification for each application is required via fax.
<b>MOD_09_10</b>	AP12 Text	This Modification is proposed in the interest of clarity and in avoidance of confusion. The text of AP12 can be convoluted and confusing to newcomers and Committee Members alike. There is also a need to correct the capitalisation of terms defined within the Code or AP Glossaries and naming conventions of a number of terms used by the Committee that are not reflected within AP12. Breaking down the individual steps and procedures within the text of AP12 has the effect of providing ease of use for Participants, the Committee and the Secretariat.
<b>MOD_10_10</b>	Nomination of Alternate	It has come to pass that a Member and his Alternate Member were unable to attend a meeting of the Modifications Committee. On this occasion the Member was not able to confirm their absence until shortly before the scheduled meeting. The Member requested to nominate an Alternate Member to represent a Modification Proposal on his behalf, and to vote on that Modification in his absence. As the notification was not received by the Secretariat within the permitted timeframe the Secretariat deferred to a Committee decision as to whether the Alternate Member would be permitted to act on this occasion. With the agreement of the Committee permission was granted. The Secretariat noted at this meeting that it felt 10 working days to be excessive notification period, and with the encouragement of the Committee proposed to modify the Code.
<b>MOD_11_10</b>	Removal of Proposal Notice Term	The term 'Proposal Notice' is effectively redundant in that it is not readily used by the Modifications Committee or its Secretariat. For this reason, and for the avoidance of confusion or discrimination between Participants not familiar with the Modifications Process in practice, it is proposed to remove the term from the Code.
<b>MOD_12_10</b>	Publication of the Code	The obligation to publish a new version of the Code following the approval of any Modification is unrealistic. Similarly, the requirement that the Code be published on a quarterly basis is problematic as it may eventuate that there are only a few or very minor amendments required to the Code by

		way of approved Modifications, hindering the effective use of the Secretariat as a resource. Aligning the publication of the Code with the Central Market Systems releases means the re-publications take place at more pertinent times within the SEMO calendar.
<b>MOD_13_10</b>	Ex Post LOLP Determination Clarification	At present, clauses M.28 and M.29 of Appendix M of the T&SC oblige the System Operators to calculate the Interim Ex-Post Margin (IEMh) and the Ex-Post Margin (EMh). However, in practice these quantities are calculated by the Central Market Systems. This modification proposes to clarify this and has arisen from the 2009 Market Audit.
<b>MOD_14_10</b>	Excess Cash Collateral Drawdown Requirements	The process for excess cash collateral drawdown is set out in Section 3.5 of Agreed Procedure 9. However, the current provisions fail to specify the circumstances in which it may be used, such as the lower limits where Invoice amounts are less than the transaction costs of processing payment and the provision allowing Generators making Resettlement Invoice payments to use this mechanism. This modification proposal aims to clarify the procedure for using excess cash collateral to pay outstanding Invoices.
<b>MOD_15_10</b>	Further Extension of Interim Provisions for ESU	This modification proposes to extend the existing Error Supplier Unit clause, Section 7.12, by a further 2 years until April 2012 in line with the timetable for the implementation of Global Aggregation.
<b>MOD_16_10</b>	Removal of Section 6.91	Removal of different rules for Energy and Capacity Resettlement following an upheld Data Query. A number of provisions were included in the Code and the APs to provide for a sufficient Data Verification Period for Capacity Settlement. These include carrying out a dedicated Settlement Rerun for changes to Settlement Items regardless of their materiality. This was included as it was felt that there were not a sufficient number of days between Indicative Capacity Settlement and Initial Capacity Settlement in order to verify the data inputs. However, this is no longer the case and Capacity Settlement and Energy Settlement should be subject to the same rules in this regard. Removal of obligations to carry out dedicated Settlement Reruns for Low Materiality changes after Final Settlement has taken place.
<b>MOD_17_10</b>	Testing Tariff Update Clarification	The System Operators are obliged under Section 5.175 of the Code to propose Testing Tariffs for the approval of the Regulatory Authorities. Thereafter the System Operators are obliged to provide the Testing Tariff Data Transaction to the Market Operator (5.176) and the Market Operator is obliged to publish the parameters (5.177). The System Operator may update these tariffs within a year, with the prior approval of the Regulatory Authorities (5.178). The Market Operator is then obliged to publish the updated tariffs (5.179). However, clause 5.178 currently states that the Market Operator may update the Testing Tariffs. Clearly this is the System Operator's prerogative. Therefore this modification proposes to amend clause 5.178 to reflect this.
<b>MOD_02_10</b>	Validation of Technical Data: Further Extension of Interim Validation Process	At present the Trading and Settlement Code (T&SC) provides for an interim manual process between the Market Operator and System Operators for the validation of Technical Offer Data. This interim process is valid until the end of April 2010 under Section 7 of the T&SC. This modification is scheduled to be implemented as part of the SEM R.1.8.0 release - the second of the 2010 biannual releases. Therefore, the current interim solution

		requires an extension in order to allow time for the implementation of the enduring solution.
<b>MOD_03_10</b>	Trading Site definition amendment	Section 5.150 of the T&SC states that “a single Demand Side Unit may be associated with a number of Demand Sites provided that those Demand Sites comprise one single Supplier Unit and that those Demand Sites are within the same Currency Zone. The existing Glossary definition appears to contradict this. This modification proposes that Demand Side Units should also be excepted from this condition in the Glossary definition of a Trading Site, so that the Code is internally consistent.
<b>MOD_05_10</b>	Clarification of the Submission of SRAs by Account ID	Under the existing market rules, outlined in AP10, Participants may lodge a maximum of six Settlement Reallocation Agreements per Trading Day in a Billing or Capacity Period. However, submission of SRAs occurs at an Account (PT_nnnnnn) level, not at the higher Participant (CP_nnnnnn) level and the limit of six SRAs applies at the Participant Account ID level. This has led to a number of queries from Market Participants on submission of SRAs. This modification proposes amending Agreed Procedure 10 to reduce ambiguity and associated queries to SEMO. In addition, it clarifies that Participants with more than one Account ID have additional flexibility in SRA submission.
<b>MOD_06_10</b>	Change to Settlement query process to facilitate query of all settlement re-runs	Under the current code, there is no specific facility to query ad-hoc settlement rerun statements or to query any settlement rerun statements issued after the last Timetabled Settlement Rerun. This modification allows participants to be compliant with the code with regards to raising queries on ad-hoc settlement reruns and additionally would allow a participant to query a resettlement statement issued after the current limitation of M+13 and 5 working days.
<b>MOD_07_10</b>	Change to Settlement query process to increase period allowed to raise settlement query on M+13 statements	Under the current Code the time allowed to raise a query on the final timetabled settlement rerun is restricted to 5 working days which means that time available to review these statements is very limited. These statements are generally issued in batches 7/14 days which is a significant body of work to be reviewed in the time allowed.
<b>MOD_08_10</b>	Housekeeping 2	The Modification sets out various corrections to numbering and formatting of various sections of the T&SC.
<b>MOD_40_09</b>	RA Modification Proposals	Following on from a consultation (SEM/09/065) on RA Modification Proposals, the SEM Committee, in their decision paper (SEM/09/099), decided to submit a Code Modification Proposal to the Modifications Committee which seeks to allow a 6-month timeline for Modification Proposals categorised as “RA Modification Proposals”. The SEM Committee’s view is that changes driven by regulatory processes, which have been consulted upon previously, should be the subject of a shorter review period by the Modifications Committee, leading to a timely report to the RAs. The SEM Committee does not believe that such a facility should be widely available and takes the view that it should be used with discretion.
<b>MOD_41_09</b>	Aggregated Generator Unit Capacity Change	The modification allows for a decrease or increase in the number of individual Generators into the Aggregated Generator Unit which was previously

		not allowed for.
<b>MOD_42_09</b>	Removal of Reference to Administered Settlement in Force Majeure Paragraphs	This Modification Proposal seeks to remove the reference to Administered Settlement in the Force Majeure paragraph 2.330.4. The Market Operator could not be expected to implement Administered Settlement in circumstances other than those specified in Section 6 in relation Administered Settlement and in the approved calculations and methodology. As such the clause serves no purpose but rather creates unnecessary ambiguity in relation to the Market Operators obligations in the case of a Force Majeure.
<b>MOD_43_09</b>	Clarification on Invoice SRAs and Currency Costs	There have been a small number of Participant queries due to Generators being issued with an Invoice for Initial Settlement even though they have had significant Generation during the Settlement Period. The reason for this is due to the inclusion of SRAs and the subsequent inclusion of Currency Costs during the Invoice processing. Section 6.245A of the Trading and Settlement Code describes how SRAs are evaluated against Trading and Capacity Payments on the Invoice to determine whether any SRA cancellations are required as part of invoicing process. The Central Market Systems perform the invoicing process in accordance with the description in the Code. However, AP10's explanation of this same process can be interpreted differently to that of the Code. Although the Code takes precedence to the AP, in order to avoid confusion in the future and remove the inconsistency between the Code and the AP, this Modification Proposal seeks to change the wording in AP10 to better align with the Code.
<b>MOD_44_09</b>	Process for withdrawal of Modification Proposals	The process for withdrawing a Modification Proposal is not explicitly communicated within the Code. The addition of the proposed paragraph would remove any ambiguity in relation to the withdrawal process. It is intended that the codification of the withdrawal process will further streamline and increase the transparency of the processes and functions of the Modifications Committee.
<b>MOD_46_09</b>	Treatment of Uls in Pumped Storage Units when Pumping	Turlough Hill (TH) is a 4 unit pump storage unit. When TH is in generating mode, it behaves in a similar manner to other generation plant. When TH is in pumping mode, it's behaviour is very different to other generation plant. However, pumping mode is treated as negative generation and thus is subject to Ul's. When TH is in pumping mode, the operator has only two possible options – either pump or don't pump. The MW used by TH to pump water up to the reservoir vary from start of pumping when the reservoir is emptier to the end of pumping when the reservoir is full. The exact MW used vary depending on head height and other physical factors and can vary by approximately 4/5MW for each unit from start to end of pumping. TH has no control over the MW used but is dispatched to pump at a certain MW which is impossible for the plant – hence TH is subject to Ul's every time the units pump. In pumping mode, the blades on the turbines can only operate in one position (fully open), this is a physical limitation. No governor control is possible in pumping mode unlike when in generation mode.
<b>MOD_36_09</b>	Extending interim provision for Error Supplier Unit calculation	This modification proposes to extend the existing Error Supplier Unit clause, Section 7.12, by a further 2 months.
<b>MOD_37_09</b>	Correction of Instruction Profiling rules for Pumped Storage Units	This Modification Proposal relates to how Dispatch Instructions for a Pumped Storage Unit are handled by the Instruction Profiler.

<b>MOD_38_09</b>	Clarification of application of Resettlement Currency Costs	This modification proposal contains amendments to the Code and Agreed Procedure 15 for two purposes 1) The clarification of the calculation of currency costs for Resettlement and 2) To correct the equations in Section 6 of the Code relating to the Billing and Capacity Period Currency Costs.
<b>MOD_39_09</b>	Housekeeping	The Modification sets out various corrections to numbering and formatting of various sections of the T&SC.
<b>MOD_34_09</b>	Global Settlement	<p>Early in the development of the SEM, metering requirements were identified as being of major importance to the success of the wholesale market but getting both MRSO and NIE T&amp;D to implement Global Aggregation on top of all the other metering requirements of the SEM was step too far and Global Aggregation was postponed until after the delivery of the SEM.</p> <p>With the implementation of Global Aggregation, the Error Supplier Unit calculation specified in the Code will finally do what it says on the tin – produce the quantity of the error in the SEM.</p>
<b>MOD_33_09</b>	Force Majeure Reporting	This Modification Proposal seeks to ensure that the Regulatory Authorities are informed by the Market Operator in the event that any Party is affected by an event of Force Majeure.
<b>MOD_24_09</b>	Definition of Tariff Year and correction of Loss Factor timelines	<p>Distribution Loss Adjustment Factors (DLAFs) for Northern Ireland and Republic of Ireland are calculated and approved on a Tariff Year basis – i.e. from 1st October to 30 September each year, with the process commencing year ahead. In contrast, Transmission Loss Adjustment Factors (TLAFs) for Northern Ireland and Republic of Ireland are set on a Calendar Year basis, i.e. from 1st December to 31st December each year, with the process commencing year ahead. This Modification will:</p> <ul style="list-style-type: none"> <li>• Define the Tariff Year.</li> <li>• Correct the current erroneous DLAF timelines in the Code</li> <li>• Change the TLAF calculation, submission and publication timescales to coincide with the Tariff Year</li> <li>• Change the CLAF calculation and publication timescales to align with the Tariff Year.</li> <li>• Implement a single business process for calculation, submission and publication of TLAFs, DLAFs and CLAFs for the Tariff Year ahead.</li> </ul>
<b>MOD_27_09</b>	Change to Letter of Credit Template wording for payment of charges	The normal practice for fees on Letters of Credit in the SEM is to have Issuing Bank (Market Participant's Bank) charges be paid by the Applicant (Market Participant), and all Advising Bank (SEM bank) charges to be paid by SEMO. This practice is in keeping with the banking agreement between SEMO and the SEM bank. However, the current version of the Letter of Credit template in Appendix A of the Code does not mirror the normal practice or banking agreement. The template instructs the Advising Bank (SEM bank) to claim charges from the Applicant (Market Participant). This has caused confusion for all parties involved since market start, and has led to occasions where Market Participants have been charged fees which have required reimbursement. In order to avoid future issues and to clarify the preferred procedure, this Modification Proposal looks to align the normal practice, banking agreement and Letter of Credit wording.

<b>MOD_31_09</b>	Unit and Interconnector Forced Outage Rate Modifications	This modification seeks to remove errors in the formulation of Interconnector Historic Forced Outage Factors (IHFOF) and also to make Appendix M more internally consistent.
<b>MOD_25_09</b>	Publication of two-year generation outage plans	The outage plans for generators are a key component in setting the prices in the Single Electricity Market. The tariffs available to customers are set based largely on auctions held more than one year in advance of the tariff-year. In order to have fair and transparent information available to all competitors this key information should be available prior to the auctions. This means that a two-year outage plan will have to be published.
<b>MOD_12_09</b>	Loss Adjustments in Constraint and Make Whole Payments	The modification is needed in order to align the methodology that Generator Units use to recoup the cost of transmission losses associated with Offers for No-Load and Start-Up with that used to recoup transmission-loss costs reflected in Price-Quantity Pairs. The proposal is linked to the SEM Committee Direction SEM-08-179 which directs that the incremental cost of transmission losses must be reflected in Price-Quantity pairs, and that it is intended to direct this also should be the case for No-Load and Start-Up Costs once this Modification is implemented.
<b>MOD_15_09</b>	Modifications Committee Operations - Section 2 Changes	At Meeting 20 of the Modifications Committee the Secretariat proposed recommendations to the Committee on the processes documented in AP12 (Modifications Committee Operation) and obligations under Section 2 of the T&SC V4.5. It is hoped that the proposed Modification improves and simplifies in certain cases the current process facilitating efficiency in the running of the Modifications Committee with respect to production of FRRs, and streamlining of timelines etc.
<b>MOD_47_08</b>	Validation of Technical Data: Enduring Validation Process	At present the Trading and Settlement Code (T&SC) provides for an interim manual process between the Market Operator and System Operators in relation to the validation of Technical Offer Data. This interim process is valid until the end of October 2008 under Section 7 of the T&SC. This modification proposal contains proposed changes to the T&SC to put in place an enduring solution.
<b>MOD_49_08</b>	Aggregate Payments for Invoices	This modification seeks to provide a means for Participants to reduce the number of payments they need to make per month, by grouping payments for the same Account, for the same invoice type (trading, capacity or market operator charge) and same due date into one single payment. In doing so this could reduce the number of payments per month from 28 to 10. This modification would allow Participants to continue making individual payments for each invoice issued in the market if they so wished, but would allow an additional option for Participants that have the flexibility, or believe there is a financial benefit to them, in amalgamating their invoice payments.
<b>MOD_54_08</b>	Individual Warning Limit above the Default Warning Limit	The warning limit is a parameter that is used to trigger the issuing of a warning notice to a Participant whose credit cover requirement is nearing their posted credit cover. The warning notice is for informational purposes only and does not require a Participant to take action. It is separate and distinct from the credit cover increase notice (CCIN) which issues when a Participant's credit cover requirement is greater than their posted credit cover. A Participant must take action to resolve a CCIN within 2 working days. A default warning limit is approved on a yearly basis by the Regulatory Authorities. This default value is currently 75%. Participants are able to set an individual warning limit, but this value can only be lower than the default warning limit.



The relevance of warning notices to Participants is dependent on their individual circumstances and methods for management of their credit cover requirement. While it is prudent to provide a default warning limit for the SEM, this default is not appropriate for all Participants situations. This modification does not stop Participants from using the existing default value or setting a warning limit lower than the default value. It merely provides Participants with the option to set a higher warning limit than the default if they believe this is more appropriate to their situation.

**MOD\_34\_08** Dual Rated Generator Amendment

The T&SC and MSP implementation of its Rules model generators as having a single fuel type and do not take account of the special case where a generator may have more than one fuel type and a different rating corresponding to each fuel type. The Kilroot generator consists of two 300MW units which were originally commissioned to run on oil. The units were later converted to allow the burning of either oil or coal. However, when fired by coal, each unit can only run up to 220MW and when fired on oil 260 MW. In normal operation the units are generally run on coal i.e. are available up to approximately 220 MW using coal. In order for the units to generate up to 260MW, they must be switched to operate on oil. This change over takes approximately 6 hours. During oil to coal firing operation changeover the units must drop their output to ~150 MW. This changeover typically takes less than one hour.

This behaviour cannot be accurately modelled in the current MSP software and is not accounted for in the existing T&SC Rules. The units currently submit price quantity pairs reflecting their SRMCs for coal up to their penultimate offer step. Thereafter their commercial offer data reflects the use of oil. The time that the units take to change over from coal to oil is reflected by a dwell time in their technical characteristics. The current handling of these Dual Rated units within the market has resulted in high price spikes, as the Kilroot units have become the marginal units which set the price on a number of days, on occasion for more than one interval.

As a Rules and systems change to more accurately model the operation of the units i.e. a change to the market engine, would be very major, this modification proposes to define a new type of generator unit, a "Dual Rated Generator Unit". A simplified solution to the issue is proposed, whereby the units' availability in the Energy market would be limited to the availability of the fuel which they are actually using. The units' availability in the Capacity market would remain equal to their max availability i.e. max (availability on oil, availability on coal).

*Approved Not yet Implemented*

Mod ID	Modification Title	Description
<b>MOD_01_11</b>	UI Payments for Generator Units	At present when a generator incurs an uninstructed imbalance for over generation, the payment received is based upon the minimum of SMP and Dispatch Offer Price. With this methodology, the penalty for Over Generation is excessive for plant which is constrained on as opposed to plant which is in merit.
<b>MOD_06_11</b>	Increasing Maximum Daily Submission Number	<u>Increase on Daily Maximum Number of SRAs:</u>

<p>and Automating Cancellation of Settlement Reallocation Agreements</p>	<p>The coming online of the EWIC in 2012 will see either the registration of new units or an increase in the volume being registered by Interconnector units (depending on final implementation). Either way, the management of Credit Cover positions (as well as cash flows) using SRAs will necessitate an increase in the number of SRAs allowed to be lodged daily by Participants.</p>
	<p><u>Automating Cancellation of SRAs:</u></p>
	<p>The proposed design of Intra-Day Trading arrangements requires a more 'aggressive' treatment of Credit Cover requirements for Interconnector units. Given this development, in order not to frustrate potential trades, it will be necessary to improve the management of SRAs. Automating cancellation of SRAs allows Participants be more responsive under the proposed Credit Cover arrangements.</p>
<p><b>MOD_10_11</b> Interconnector Under Test</p>	<p>Testing Tariffs should apply to an Interconnector while undergoing testing for Commissioning, Grid Code Compliance or otherwise. It is recommended that the Interconnector Error Unit, which is registered to the Interconnector Administrator, as procured by the Interconnector Owner, is liable for the testing charges incurred while the Interconnector is under test.</p>
<p><b>MOD_12_11</b> Interconnector Unit Loss Adjustment When Exporting</p>	<p>Currently, the Moyle Interconnector connects Scotland with Northern Ireland. In 2012, the EW Interconnector will connect Ireland with Wales. Each of these DC Interconnectors will incur losses associated with the transmission of electricity. Current Transmission Loss Adjustment factors (TLAF) for Interconnectors are based on the point of connection in SEM jurisdictions, plus an allowance for losses on the Interconnectors to the Connection Point (noting that DLAF for Interconnectors is equal to one). Within the current Code, adjustment for losses reflects the transfer of electricity between the Connection Point of a Unit and the Trading Boundary, where:</p>
	<ul style="list-style-type: none"> <li>• Connection Point: The point at which the Generator Unit or Supplier Unit is deemed to be connected within the SEM.</li> <li>• Trading Boundary: A notional balancing point for generation and supply and is the point of sale for trading in the SEM.</li> </ul>
	<p>This treatment when exporting is incorrect, as it does not reflect the fact that (assuming that the losses related to the Moyle are around 2%), This Modification proposes to adjust quantities for Interconnector Units (where required in accordance with the Code) when exporting by the reciprocal of the CLAF provided by the System Operator to the Market Operator.</p>
<p><b>MOD_40_10</b> Differentiation between Dwell Times and Dwell Trigger Points while ramping up and ramping down</p>	<p>At present generators submit as part of their Technical Offer Data up to 5 Ramp Up Rates, 5 Ramp Down Rates, 4 Ramp Up Break Points, 4 Ramp Down Break Points, 3 Dwell Times and 3 Dwell Time Trigger Points. There is no differentiation between Dwell Times and Dwell Time Trigger Points for generators when ramping up or ramping down. This lack of differentiation between a Dwell Up Time/Dwell Down Time and Dwell Time Up Trigger Point /Dwell Time Down Trigger Point, limits the ability of the MSP software to accurately capture the behaviour of certain generators. With current practices, if certain units only need dwell times for ramping up, they are forced to have a very low ramp up rate to accommodate this. This has lead to the situation where a unit which would require two dwell times and two ramp rates would need six ramp rates to accommodate their performance. Also as the MSP software cannot accurately model generator units with these characteristics, it is limited in solving for the most economic System Marginal Price and Market Scheduled Quantities.</p>

<b>MOD_42_10</b>	Changes to the Single Ramp Up Rate and the Single Ramp Down Rate Calculation	<p>At present, the method used to calculate the Single Ramp Up and Down Rates in SEM results in values that fluctuate considerably from one Trading Day to the next and are not always a valid representation of the actual capabilities of the unit. Clearly this is not the intention of the T&amp;SC, as it aims to set down rules that accurately model Generator technical characteristics.</p> <p>The modification aims to more accurately model reality and thus achieve a less volatile application of ramp limitations in the Market Schedule. With the proposed change, Ramp Rates will not be impacted by an artificially low Minimum Stable Generation when coming back from (or going into) an outage.</p>
<b>MOD_43_10</b>	Variable Price Taker Generator Units and Firm Access	The Modification Proposal is believed to better facilitate Code Objective 4: “to promote competition in the single electricity wholesale market on the island of Ireland” by ensuring that Price Taker Generator Units are treated in the same way as Price Maker Generator Units when operating in their non-firm region. It is proposed that the requirement set out in the regulatory documents referred to in the Appendix can be met by the changes included in this Modification Proposal.

*In Progress*

Mod ID	Modification Title	Description
<b>MOD_04_11</b>	Removal of requirement that a demand site in a DSU shall not have an MEC	Removal of this unnecessary restriction will facilitate the participation of sites with MEC < 10MW as Demand Side Units. This will make the load reduction capacity and excess generation capacity of such large energy users available to System Operator. Sites with MEC <10MW typically have embedded CHP generation where the ratio between the site heat load and site electrical load is such that it is economical to export electricity. These are demand sites where demand can become negative in periods of large site heat requirements. Participation of these sites as part of an aggregated DSU, as opposed to an AGU is more practical as it facilitates netting generator output against site demand and also results in declaration of available reduction capacity as opposed to total generation capacity.
<b>MOD_14_11</b>	Pumped Storage Under Test	Pumped Storage units should be liable to Testing Charges. This modification proposes to further the TSC objective, in particular to ensure no undue discrimination between persons who are parties to the Code (Section 1.3.6).
<b>Mod_16_11</b>	Credit Worthiness Test for SEM Bank and Credit Cover Provider Banks	The proposal seeks a revision of debt rating for the SEM Bank and Provider Banks.
<b>Mod_17_11</b>	Clarifying the requirement to provide Dispatch Instruction for Generator Units	The proposal, proposed by Airtricity, states that there is no explicit restriction on the provision of Dispatch Instructions for Autonomous Generator Units, Interconnector Units or Interconnector Residual Capacity Units in the market rules. However for the reason that the Market Operator does not

need the data for Instruction Profiling, as well as for the existing technical situation wherein if the Dispatch Instructions were issued to the Market Operator for those classes of Generator Units, the market systems would automatically procure Instruction Profiling for them, in practice Dispatch Instructions are not sent to the Market Operator.

While we accept that Instruction Profiling does not need to be performed for those classes of Generator Units, it does not necessarily follow that the Dispatch Instructions relating to them should not be received by the Market Operator and published in the Central Market Systems as the relevant data for other classes of Generator Units are published. In essence, while the Market Operator may not need the data for its operations, Market Participants do need the data for their own purposes which include the monitoring of generation assets in relation to TSO dispatch actions. For these purposes the Market Operator would be functioning in its role as a central information clearing agent. If this modification is not approved, the faulty logic applied to the provision of Dispatch Instructions for certain classes of Generator Units by implicitly linking it to the Code obligation to not perform Instruction Profiling for those classes of Generator Units will be allowed to continue. This would be contrary to the Code Objectives regarding facilitation of participation of electricity undertakings (Objective 3), transparency (Objective 5) and ensuring no undue discrimination between persons who are parties to the Code (Objective 6).

**Mod\_18\_11** Definition of 'Availability'

The proposal, proposed by Endesa Ireland states that the current definition of Availability leaves room for ambiguity in interpretation. This raises concerns around certainty and transparency; it is preferable for the Trading and Settlement Code definition to be amended to provide certainty.

This Modification will align the Trading and Settlement Code definition of 'Availability' with the Grid Code definition, which deems a generator to be available where it is capable of delivering electricity to the Connection Point. If the proposal is not implemented, there will continue to be ambiguity in the definition of Availability.

**Mod\_21\_11** UI Payments for Generator Units Constrained On

At present when an Energy Limited generator incurs an uninstructed imbalance for over generation, the payment received is based upon the minimum of SMP and Dispatch Offer Price. As Energy limited plant must have a DOP = €0, this means that there is no payment possible for overgeneration. Overgeneration occurs for two reasons as follows

- a. Overgeneration as a result of plant free governing and responding to system frequency. In this case the plant correctly generates above DQ but cannot get compensated.
- b. Overgeneration as a result of poor plant performance. In this case, the tolerance bands and the associated DOG provide adequate incentive to remain within the tolerance bands (as for all plant).

Without this modification, energy limited generation units which correctly operate in the market and generate above DQ as a result of system frequency variations will not get remunerated which is discriminatory and perverse.

<b>Mod_23_11</b>	Additional Clause for Standard Letter of Credit	This proposal, proposed by Airtricity, raised following advice from Lloyds proposes the addition of a clause to the conditions set out within the current version of the Standard Letter of Credit. The proposal ensures that future Letters of Credit comply with the current view of best banking practice.
<b>Mod_27_11</b>	Market Operator Solvers Policy	<p>This proposal seeks to define the existing policy used by SEMO in relation MIP and LR as the 'Market Operator Solver Policy' and to make any changes to it subject to the approval of the SEM Committee.</p> <p>This ensures that there is a clear process for implementing any changes to the Market Operator Solver Policy and removes any discretion that may have existed in relation to the use of different solvers.</p> <p>If this Modification Proposal is not implemented, the existing method for changing and updating the Market Operator Solver Policy would remain.</p>
<b>Mod_29_11</b>	Revision of Standard Letter of Credit Template	<p>This Modification Proposal replaces the current Standard Letter of Credit template with one that aligns with internationally recognised finance standards set out in Uniform Customs &amp; Practice for Documentary Credits (UCP600). This is the international standard used for documentary credits or Letters of Credit.</p> <p>Appendix 1 below provides supporting guidelines for Participants and their banks, which would indicate all fields required to be filled out on their behalf.</p> <p>If this Modification Proposal is not approved, the current template will remain in a non-standard format that may not be accepted by banks or may increase the processing required to provide a Letter of Credit.</p>
<b>Mod_30_11</b>	Assessment and Approval of Registration Data	<p>This modification is required to clarify the Registration process and obligations for all parties involved. It aims to align Agreed Procedure 1: "Participant and Unit Registration and Deregistration" with the obligations that are already set out in the Trading and Settlement Code. The clarification was highlighted by an internal Eirgrid audit.</p> <p>On review considering the number of Distribution Connected Generator Units registering in the SEM it was considered appropriate for this Modification to also include the Distribution System Operators and the Distribution Codes. Thereby ensuring equal treatment of all Generators in the SEM regardless of their point of connection.</p>
<b>Mod_31_11</b>	Calculation of Estimated Energy Price (EEP) and Estimated Capacity Price (ECP)	This Modification Proposal seeks to address an inconsistency in the calculation of EEP and ECP that exists between the Code and the CMS. The inconsistency was discovered during the development of Intra-Day Trading.

<p><b>Mod_32_11</b></p>	<p>Excess Cash Collateral Drawdown Requirements</p>	<p>It is proposed to have a Standing Request for Participants to draw down from their excess cash collateral to pay outstanding invoices amounts. The Standing Request means that a Participant can request SEMO to draw down from their Excess Cash Collateral for Invoices due. It is also proposed that the Participants can use their Excess Cash Collateral to draw down for FMOC and Blended VAT Invoices, which they cannot do at the moment. As Excess Cash Collateral is used, it does not affect their Required Credit Cover.</p>
<p><b>Mod_33_11</b></p>	<p>Temporary exclusion of Interconnector Error Unit Testing Charges from Settlement calculations</p>	<p>Mod_10_11 Interconnector Under Test was approved by the Regulatory Authorities on July 21st 2011. It requires changes to the Central Market System. As the scope for 11th Scheduled Release SEM R2.0.0 (Deployment Date July 2012) is full, the earliest that this change could be incorporated in the CMS is October 2012, after the commissioning phase of EWIC which is scheduled for June/July 2012.</p> <p>The MO undertook the investigation of a time-limited manual workaround to implement Mod_10_11 so that Testing Tariffs could be applied to EWIC during its commissioning phase. However, a possible manual workaround is complicated by the fact that Testing Charges are included in the Total Payments made for a Generator unit in a Settlement Day i.e. DAYPUud, which in turn feeds through into a number of other calculations including Invoice Energy Payments (6.124), Billing Period Currency Charge (6.136 &amp; 6.136A), Balancing Cost (6.141), Unsecured Bad Debt Energy Charge (6.153) and Actual Generator Exposure (6.187).</p> <p>While it is feasible to implement the inclusion of the testing charges manually in the Invoice Energy Payments (6.124) and the Balancing Cost (6.141) for a limited period, it is not feasible to implement a manual workaround adjusting the calculations in relation to Billing Period Currency Charge, Unsecured Bad Debt Energy Charge and Actual Generator Exposure.</p> <p>The proposed change temporarily removes the Testing Charges associated with Interconnector Error Units from the Total Payments to Generator Unit calculation (DAYPUud). The Testing Charges are then added back in to the Invoice Energy Payments (6.124) and the Balancing Cost (6.141) calculations. This is to ensure that the obligation remains for the Interconnector Administrator to pay Testing Charges for the Interconnector Under Test.</p> <p>The Testing Charges are excluded from the Billing Period Currency Charge (6.136 &amp; 6.136A), Unsecured Bad Debt Energy Charge (6.153) and the Actual Generator Exposure (6.187) calculations.</p> <p>The temporary provisions extend until the date of the 12th Scheduled Release Deployment Date i.e. the Oct 2012 release when Mod_10_11 is scheduled to be implemented.</p>
<p><b>MOD_18_10</b></p>	<p>Intra-Day Trading</p>	<p>The Modification Proposal is designed to ensure that the SEM rules comply with the Congestion Management Guidelines set out in Regulation 714/2009 of the European Council and Parliament which require that:</p> <ul style="list-style-type: none"> <li>• 'By 1 January 2008, mechanisms for the intra-day congestion management of interconnector capacity shall be established in a coordinated way and under secure operational conditions, in order to maximise opportunities for trade and to provide for cross border</li> </ul>

	<p>balancing (section 1.9) and,</p> <ul style="list-style-type: none"> <li>• 'Successive intra-day allocations of available transmission capacity for day D shall take place on day D-1 and D, after the issuing of the indicated or actual day-ahead production schedules'. (section 4.3) and,</li> <li>• 'the access rights for long and medium-term allocations shall be firm transmission capacity rights. They shall be subjected the use-it-or-lose-it or use-it-or-sell-it principles at the time of nomination' (section 2.5)</li> </ul> <p>This Modification is intended to meet the Trading and Settlement Code Objectives:</p> <ul style="list-style-type: none"> <li>• to facilitate the participation of electricity undertakings engaged in the generation...of electricity in the trading arrangements under the Single Electricity Market. By permitting generators in the SEM and GB market to access the SEM pool for the purpose of importing and exporting after the current single gate closure time of 10am, this Modification Proposal facilitates enhanced participation in the SEM</li> <li>• to promote competition in the single electricity wholesale market on the island of Ireland. The provision of Intra Day trading arrangements in the TSC should serve to increase competition in the SEM through greater access to prices in neighbouring markets and permitting registered interconnector users to respond to changing conditions such as wind forecasts, plant outages and demand expectations post gate closure.</li> </ul> <p>With the ultimate aim of ensuring that all interconnectors in the SEM are utilised in as efficiently as possible by allowing unused capacity to be reallocated to the market after gate closure, this modification seeks to promote the interests of customers through creating a more liquid, competitive market and increasing security of supply. As intermittent generation increases in the SEM, efficient within day interconnector rules will be key to meeting this TSC Objective.</p>
<p><b>MOD_36_10</b> Removal of connection between Supplier Units and DSUs</p>	<p>The harmonised provisions of the Ireland and Northern Ireland Grid Codes allow for an entity known as a Demand Side Units (DSUs) which are Demand Sites which offer demand reduction. The Trading and Settlement Code links these units to Supplier Units. This Modification Proposal should have minimal impact on central market systems, and consequentially should have negligible impact on the cost to consumers. Therefore, any improvement brought by competition will have immediate short-term gains for the consumers on the island of Ireland.</p>

*Withdrawn*

Mod ID	Modification Title	Description
<b>MOD_07_11</b>	Qualification of Requirement for VPTs to submit TOD and COD	It is not clear what the need to the MO or the SOs, are for VPTs to submit a Nomination Profile. Requests put to the MO as to the function of the data submitted, has met a response that such data is not used. Hence the obligation to submit the data is misplaced. It is not clear what TOD is required of VPTs. But the proposed change is only a qualification given the Grid Code drive of the SOs.
<b>MOD_08_11</b>	Correcting Calculation of Net Demand Used for	While ND is a non- Loss-Adjusted, NDA is a Loss-Adjusted quantity. Hence the combination in 4.92E is incongruous. This incongruity is further

	Settlement	compounded when SNDLF is calculated (implicitly) by multiplying SND by TLAfv (TLAF for Supplier Units). The result is that the contribution of NDA, which is already Loss-Adjusted, is further Loss-Adjusted (double-counted). In current practice, this has no impact, as TLAfv is set equal to unity (1), hence the double counting has no significance [ $1*1=1$ ; $1/1=1$ ]. If however regulatory policy changes resulting in a shift away from unity for TLAfv, this incongruity will start feeding into settlement demand figures for Supplier Units, creating a new "error pool".
<b>MOD_24_11</b>	Reflection of Physical Fixity of Interconnector Flows in Operational Data Transactions	This modification eliminates the point of potential failure in data transactions between SEMO and the IA, relating to fixed interconnector flow volumes, which may have some implications for IUs volume positions in interconnected markets.
<b>MOD_04_10</b>	Addition of Fuel Type flag to Dispatch Instruction Data Transaction	Under the Regulatory Authorities decision SEM-09/081 "Interim Arrangements: Fuel-Mix Disclosure in the SEM", it was noted that there is currently no facility in the Central Market Systems to allow SEMO to determine the Fuel Type that a generator is using at a given time. This information is necessary for the fuel mix calculation. The addition of a Fuel Type field in the Dispatch Instruction data feed will provide a solution for this by allowing the Fuel Type value to be imported into the Central Market Systems with the Dispatch Instructions.
<b>MOD_24_10</b>	Introducing loss of profits as a relevant damage within the Limitation of Liability Provisions	The Code establishes the principle of liability for loss. It does this by providing for loss arising from physical damage to property. Given the nature of the Pool, which is a financially settled market, it is inconceivable and highly unlikely that the nature of damage that can be done by one Party to another will be physical. The damages that are most likely to arise from breaches of the Code will tend to be financial in nature, specifically loss related to frustrated trade in electricity. (An example of this may arise if the Market Operator failed to include valid COD into the MSP software). However by providing for liability for loss arising from physical damage (2.317), and expressly limiting in all circumstances all financial loss (2.318), the Code fails to recognise and give effect to the reasonably foreseeable nature of loss that is likely to occur in the ordinary course of events from breaches to the Code. In this regard the T&SC is unreasonable in excluding a likely event while including an unlikely event.
<b>MOD_30_09</b>	Removal of restriction on Associated Site Supplier Units to DSUs	The harmonised provisions of the Ireland and Northern Ireland Grid Codes allow for an entity known as a Demand Side Units (DSUs) which are Demand Sites which offer demand reduction. The Trading and Settlement Code requires these units to "register as part of a single Trading Site in accordance with the provisions set out in paragraphs 2.60 to 2.64: a single Supplier Unit which is a Trading Site Supplier Unit, with which the Demand Reduction is associated. A participant felt that the clause is unnecessary, restrictive and discriminatory, and should be changed:
<b>MOD_29_09</b>	Clarification on Settlement Statement – Only Settlement Day(s) affected republished	<p>From time to time there is a requirement to perform ad-hoc resettlement as a result of upheld Data and Settlement Queries. When an ad-hoc Resettlement event occurs new versions of the Settlement Statements are published (with incremented version numbers), as well as Participant Information Reports (PIRs) which do not have versioning and just overwrite the previous report. The minimum requirement for Participants to have enough information for reconciliation purposes is to republish only the Settlement Statements and PIRs for the Settlement date affected.</p> <p>Soon after market start the requirement to publish ad-hoc revised Settlement data occurred. At the time, based on discussions with some Market Participants and a lack of clarity in the Code, the decision was taken to republish Settlement Statements for the entire Settlement Period to the same</p>



version, even though only one Settlement Day had actually been affected by the ad-hoc resettlement. This became the standard procedure for operations going forward. However, this decision resulted in additional workload for the SEMO in order to republish all Settlement Statements within the Settlement Period.

SEMO proposed a modification to the Code – specifically AP 15 - Invoicing to clarify the process for republishing in order to revert to the minimum publishing requirement by Participants for reconciliation purposes. This will allow new or existing Participants to know with certainty exactly what the market procedure is on republishing and versioning of statements, so they can ensure their systems and processes are aligned accordingly. In addition it will remove the additional 10 days per year workload that the SEMO controllers are currently carrying.

The proposal involves republishing only ad-hoc Settlement Statements and PIRs for Settlement Days where a change has occurred. This would mean that version numbers for each run type may not be consistent across a Settlement Period due to ad-hoc resettlement.

**MOD\_26\_09** Removal of ambiguity in various clauses of Agreed Procedure 10

In “Agreed Procedure 10: Settlement Reallocation”: Changing “expects to receive” to “reasonably expects to receive” changes a subjective criterion to an objective one. This change seeks to prevent unreasonable expectations of revenue being used to offset credit cover requirements.

*Rejected*

Mod ID	Modification Title	Description
<b>MOD_11_11</b>	Interconnector Data Submission Point	<p>This modification proposes enduring changes to define the submission point of Interconnector related quantities as being at the opposite end of the link to SEM. The Central Market System and the enduring Code were designed on the basis that Interconnector related quantities will be defined at the Northern Irish end of the link (for the Moyle Interconnector), whereas MITS defines all quantities at the Scottish end, aligning with the UK BETTA arrangements. There is a difference between these quantities due to losses on the link itself, with subsequent consequences for the calculation and settlement of Interconnector quantities. A similar situation will arise for the EWIC Interconnector, for which the Auction Management Platform will define all quantities at the Welsh end of the Interconnector.</p> <p>To date, interim arrangements have been in place in Section 7 of the Code defining the point of connection of an Interconnector to the SEM as being at the far end of the link. This modification proposes enduring changes to define the submission point of Interconnector related quantities as being at the opposite end of the link to SEM. It does so by defining an "Interconnector Data Submission Point" rather than using the Connection Point - which is the Interconnector's physical point of connection to the Transmission System.</p>
<b>Mod_19_11</b>	Modifications Committee Representation	The Modification Proposal seeks to limit representation on the Modifications Committee to one Member from each company including any affiliates.

<p><b>MOD_01_10</b> Alignment of Meter Data timelines for Autonomous Generator Units with timelines for other Generator Unit types</p>	<p>Generation Meter Data is used in core MO functions of market pricing and settlement. The data is broadly classed into Price Effecting and Non-Price Effecting. Autonomous Generator Units are classed as Non-Price Effecting. However in addition to market pricing and settlement, Generation Meter Data is also used in the production of various Market Reports (as detailed in the MPUD). These reports are used by Market Participants for various business functions.</p> <p>At present such purposes are not possible because the timelines for Meter Data in respect of Autonomous Generator Units, which lags other Generator Units types, means that a variable such as MSQ, used both in pricing and settlement, has a different value in the PIR from the value indicated on the Market Reports. This modification proposal proposes to align the Meter Data timelines for Autonomous Generator Units with the timelines for other Generator Unit types. By so doing, it aims to remove the gap that exists with respect to MSQ in particular, as differently reported in settlement (PIR) and in Market Reports.</p>
<p><b>MOD_37_10</b> Constraint Payment for Energy Limited Units</p>	<p>As the market operates, Energy Limited plant can be constrained to run, however there is no section in the code to address this issue (as it was not expected to arise). This results in energy limited plant running and receiving no remuneration. The aim of this modification is to address the reality of the market operation by including a clause acknowledging that if energy limited plant is constrained on it should be rewarded in the market.</p> <p>This modification explicitly deals with the situation where the dispatch quantity for the trading day is greater than the Market Scheduled Quantity for that Trading day. It seeks remuneration for that generation on a weighted average SMP basis which specifically excludes SMP for trading periods where there is an MSQ. It is believed the reasons for Hydro being constrained on are largely due to the operation of the LR algorithm. The MIPS algorithm, if used, results in a lower cost of generation and is considerably less likely to constrain hydro to run.</p>
<p><b>MOD_38_10</b> Treatment of Errors Under the Code</p>	<p>A number of recent incidents have given rise to RA concerns about the sufficiency of the Trading and Settlement Code provisions to address errors in inputting data (either accidental or deliberate) made by Market Participants which may have consequences on others. In some cases it appears that no practical solution is found in the Code rules to address the impact on the market of these errors.</p> <p>From a general review of the queries and disputes process, the following issues were identified:</p> <ol style="list-style-type: none"> <li>1. The Code should be modified to ensure that the Market Operator has clear instructions on how it should act in the case of data being lost, overwritten or corrupted;</li> <li>2. Should incorrect information be submitted and accepted for use by the Central Market Systems and this information affects the SMP or MSQ, then the Code should be changed to ensure that a repricing or resettlement, as appropriate can take place with the corrected information;</li> <li>3. A DRB determination concluded that the Code “will allow ad-hoc repricing and resettlement following a general Dispute procedure”. The RAs therefore believe this should be made clearer in the Code;</li> </ol>

	<p>4. Where a dispute is resolved amicably, this resolution should be published;</p> <p>This Modification Proposal has been discussed with SEMO who expressed concern that it should not be seen to have an obligation to verify the data it receives from Participants. It should remain clear that Participants are responsible for submitting correct data.</p>
<p><b>MOD_35_09</b> Standing Offer Data</p>	<p>If Standing Offer Data is used at Gate Closure the COD is essentially 28 days old and not reflective of a Generator's SRMC at that point in time. For Standing Offer Data to be in line with Bidding Code of Practice, the COD needs to be reflective of SRMC. In order to achieve this, the Standing Offer Data should be effective from the next Trading Day (D+1).</p>
<p><b>MOD_45_09</b> Loss Adjustments in the Calculation of the Cost of Running in the Procedure to Calculate final Uplift Values</p>	<p>The Regulatory Authorities have examined the costs and benefits of both Modification Proposals and consider that Mod_12_09 has more benefits than Mod_45_09 for a number of reasons, primarily:</p> <ul style="list-style-type: none"> <li>• Mod_12_09 ensures consistency in the application of TLAfs by requiring the price Quantity pairs, Market Start Up Costs and No Load Costs to be loss adjusted. Mod_45_09 does not provide for this and hence this means that the scheduling process in the Market Scheduling and Pricing (MSP) Software will continue to be biased when the software calculates the comparative economics of starting one Generator Unit or increasing the output of another;</li> <li>• Mod_12_09 will correct the current inconsistency in the Unit Commitment stage of the MSP Software when considering whether to start new generation! when scheduling generators to run;</li> <li>• The Modification Recommendation Report for Mod_45_09 noted that "in summary, the Voting Members noted that in rejecting Mod_12_09, they believed that the production cost minimisation approach taken within Mod_45_09 was more in keeping with the Objectives of the Code while still addressing the SEM Committee Decision". However, it is considered that the use of one set of costs in the Unit Commitment Schedule and Economic Dispatch and another in the calculation of SMP, as would be the case if 45_09 were implemented, is not consistent with the objectives of the Code; and,</li> <li>• Both modifications would be relatively inexpensive however the indicative cost of systems development in the Central Market Systems is forecast to be less for Mod_12_09. An additional cost would be required for recertification of the MSP software should Mod_45_09 be implemented. No costs have been estimated for the impact of either proposal on Participants.</li> </ul> <p>Considering the above, and in accordance with paragraph 2.218 of the Code, the SEM Committee decides that a modification be made in accordance with the Final Recommendation Report of the Modifications Committee (FRR_12_09), for the avoidance of doubt, based upon the legal drafting set out in Appendix 1 of that report. Accordingly, the SEM Committee decides that Mod_45_09 should be rejected and should not be implemented.</p> <p>The Regulatory Authorities therefore direct that the Modification, as set out in FRR_12_09, be made on a Trading Day basis with effect from the date of the scheduled release of the Central Market Systems which includes the required software changes.</p>
<p><b>MOD_65_08</b> Generator Unit Short Term Test Status</p>	<p>Under the current Code, a Generator Unit may only be designated as "Under Test" in advance and for an entire Trading Day. Applications to be considered as Under Test are set out in 5.168 to 5.171 of the Code, requiring that a proposed Under Test Start Date and Under Test End Date are submitted to the Market Operator (via the Central Market Systems) and validated by the appropriate System Operator. Such applications are</p>

required at least 5 Working Days prior to the start of the Under Test period.

However, the System Operators believe that within-day testing is vital to ensure efficient and secure system operation. This is consistent with the Grid Code provisions and provides opportunity to identify potential issues early and to react accordingly. As a result of this, the System Operators believe that the market rules (Code) and Central Market Systems should be modified to allow short-term (within day) periods of Under Test status after the Participant deadline as set out in the Code. It is anticipated that this will more accurately reflect operational reality.

*APPENDIX 2 CAPITAL PROGRAM UPDATE*

### *Capital Program Update*

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The following tables provide greater detail about the capital projects and their associated delivery dates.

Capital Project 1	Hardware Upgrade
<p>The Central Market systems consist of multiple hardware components and are essential to the running of the All Island Electricity Market. These hardware components are based in two server rooms (Dublin and Belfast) and consist of the following major components, servers(&gt;120), Storage Area Networks, Tape Libraries, Firewalls, Routers, Switches, Load Balancers, Spam filters, Time Servers etc.</p> <p>A full Hardware refresh program is required as equipment wears out and, market downtime is expensive. Maintaining an aged hardware infrastructure will end up costing more as the support costs will exceed the capital cost benefits of not replacing the hardware.</p> <p>It is essential that the All Island Market for Electricity continues to run in a secure, efficient and reliable manner. In order to do this, a hardware refresh is required so that the required support from vendors is available. This support is essential for all issues/problems that arise, to be resolved in a timely fashion to minimise system downtime. Additionally, the market participants will continue to experience consistent/predictable performance of the Market Systems and SEMO will realise lower operational and support costs.</p>	
<h4>Intraday Trading Project Impact</h4>	
<p>The price control covered a "like-for-like" hardware refresh. This was based on the premise that there were no approved major market changes in the pipeline at the time of the price-control which required a "beefed-up" design. Intraday Trading requirements dictated a more sophisticated implementation for the following reasons:</p> <ul style="list-style-type: none"> <li><b>Performance</b> - To maintain SEMO's system performance requirements under Intraday Trading requires substantially faster equipment with more processing power.</li> <li><b>Communication Traffic</b> will increase significantly under Intraday Trading - links and network infrastructure has to be enhanced to cater for these new requirements</li> <li><b>Capacity</b> - There is a significant increase in data volumes, transfer and storage - more capacity is required to handle this.</li> <li><b>Scalability</b> - Intraday Trading introduces 2 new ex-ante gates (EA2, WD1). The Mods Committee had considered an option with an additional 6 gates and, although discounted for implementation at this stage, SEMO were requested to ensure the implementation / design of intra-day catered for expansion to this scenario.</li> <li><b>Vendor Recommendation</b> Our vendors stated quite clearly that a "like-for-like"</li> </ul>	

upgrade would not support requirements for Intraday Trading. The costs are based on a design over which they could "certify" the systems with the new requirements.

Progress to Date

Hardware has been purchased and is in the process of being installed. The hardware includes:

- A large number of new servers and data storage equipment
- Additional communications equipment e.g. routers, cabling etc.
- Ancillary Items such as rack and shelves
- Associated licensing costs (as distinct from software) with the hardware purchases.

The hardware is due to be commissioned by the end of September and will be fully operational by October. This will be ongoing hardware costs over the 3 years. This report is synopsis of year 1 of the 3 year hardware program.

Capital Project 2

Systems Monitoring and Reporting

SEMO need to implement a system monitoring and reporting tool that supports and improves the availability and performance of the Central Market Systems. Currently SEMO resources are operating on a reactive basis and carry out daily manual checks on availability and performance. Given the importance of the availability of the Central Market Systems and the sensitivity of the information the systems contain, it is critical that SEMO implements a system monitoring and reporting tool that supports improving availability and performance across IT systems. With a System Monitoring Tool in place, SEMO will realise the benefits of automated monitoring, alerting and reporting and will adopt a proactive approach to identifying and resolving issues that will help to maintain the market systems availability.

Progress to Date

The design of the Systems Monitoring and Reporting Tool is due for completion by the end of December 2011. Ordering and commissioning is due to start in January with a Go Live date in the June/July timeframe. This proactive system will help significantly reduce the time it takes to find and clear system faults. Proactive maintenance of the CMS systems will reduce the number and duration of outages and will ensure the continued smooth running of essential market systems. This third party application will be able to provide data metrics and reports which will help in meeting SEMO's performance targets.

Capital Project 3

Systems Management

SEMO does not currently have a structured/formalised approach to its systems management. The industry standard approach is to implement a systems management tool for provisioning, configuration management, monitoring, automating, patch management, release

management and server administration. Currently systems management is performed on an ad-hoc and reactive basis and in a manner that does not utilise the SEMO resources in the most effective manner. SEMO notes that a number of systems management software packages are already available on the market, allowing all of these key activities to be automated, which can facilitate a proactive systems management strategy for the SEM systems. SEMO needs to implement an Enterprise Wide Infrastructure Management tool to enable overall cost reduction, improve governance and compliance, and provide greater agility for the market systems going forward.

Progress to Date

The design of the Systems Management application is due for completion by the end of December 2011. Ordering and commissioning is due to start in January with a Go Live date in the June/July timeframe. This system will help facilitate Patch Management, Code Releases, Centralised software server updates and will help the more efficient utilisation of IT infrastructure resources.

Capital Project 4

Virtualisation

The possibility exists for SEMO’s corporate infrastructure to be hosted on virtual machines. A virtual infrastructure allows for physical resources of multiple machines to be pooled and shared across SEMO’s entire infrastructure. These resources can be configured to serve high priority applications depending on business needs as and when these evolve and change. Resource optimisation allows greater flexibility in the distribution of data and could result in reduced capital and operational costs. An infrastructure that can scale up and down against business demand reduces the number of physical servers needed and enables fast and flexible provisioning of new servers. SEMO is focused on investigating new ways to reduce its overall IT costs and believes savings can be made by adopting a virtualisation strategy.

Progress to Date

Phase 1 of this project virtualises all of the non production systems but excludes the Corporate and Central Market Systems. This phase of the project is due to be delivered by the end of 2011.

Phase 2 These systems include the Corporate Systems which include Microsoft Exchange, Citrix and the Microsoft corporate applications such as MS Office suite of applications. This project is due to be delivered by Quarter 1 2013.

Capital Project 5

Oracle Logging

Since the creation of the SEM, auditors have consistently identified SEMO’s inability to perform security logging as an issue that needs to be resolved. The auditors have stated that SEM require logs for the following:

**Security Authentication** – confirming the validity of the user and that they are



accessing the network from no more than one site;

**Security Authorisation** – confirming whether the user has the appropriate level of access;

**Audit trail** - or historical market events so that ad-hoc queries can be addressed more effectively.

As the financial data travelling across the market systems continues to grow on a daily basis, it is essential that logging is implemented as a priority. This will enable a proactive approach to security and performance monitoring of the market systems and ultimately satisfy the long standing audit requirement.

#### Progress to Date

This project is to be delivered in parallel with the Intraday Trading project. The design is due to be finished in Quarter 1 2012 with an eventual delivery date of July 2012. This solution will resolve the security issue raised in the Market Audits.

### Capital Project 6

### SharePoint Document Management

Currently there is no centralised location for all SEMO related documentation. Files can be stored in any number of places: employee email, employee hard drive, file share etc, resulting in duplication of documentation and difficulties in locating files. The lack of a central data storage facility makes it difficult for employees to find, share, and collaborate effectively on content and valuable business information.

SEMO requires a centralised document management system that will facilitate the storage and organisation of documents and the sharing of these documents within the organisation. A document management solution can provide functionality that would enable SEMO to:

- Store, organize, and locate documents;
- Manage consistency and version control of documents;
- Help protect documents from unauthorised access or use;
- Enables collaboration between SEMO departments.

#### Progress to Date

SharePoint has been used to deliver several pieces of functionality throughout the 2010-11 year. SEMO has developed three compliance registers to meet the compliance obligations of SEMO's Market Operator Licenses and the Trading and Settlement Code. SEMO have also developed more efficient storage and data retrieval facilities to support the operations of the SEMO business. Developments over the coming year will include:

- Change Control system for the Trading and Settlement Code in light of the major changes required to the Code as a result of the Intraday Trading Project.
- Streamlining the organisation of the Market Operations data storage
- Providing a facility for the retrieval and storage of Processes, Work Procedures and Checklist templates
- Providing a facility for the soft copy entry and storage of completed checklists.

- Migrating of data storage from file shares to a document management solution.

Capital Project 7	Data Storage
<p>Currently, SEMO does not have any data archiving in place. All data is stored online and available at all times despite the regulatory requirement to only have 2 yrs of online data and 7 yrs of offline data available at any time. As a direct result of this, SEMO is experiencing storage space problems as the data builds on a daily basis. This is putting a significant amount of pressure on the current disk architecture as there is no partitioning or tiering of the data in any form.</p> <p>SEMO therefore requires a data storage solution that will help reduce the disk space requirements thus providing significant cost savings. Costs savings will be realised as less critical data will be housed on inexpensive servers.</p>	
<p><b>Progress to Date</b></p> <p>Phase 1 the Database partitioning of the database is due for delivery in November 2011. The archiving of the database data will be completed by December 2012.</p> <p>Phase 2 of this project will consist of general file storage archiving. This involves the archiving of less structured data across SEMO and is due in Quarter 1 2013.</p> <p>Phase 3 involves the procurement and delivery of a file storage management system that will efficiently free up redundant and duplicate data leading to more efficient data storage.</p>	

Capital Project 8	Data Warehouse
<p>Data warehouses are a way for business users to extract information quickly and easily in order to answer questions about their business. Data warehouse tools look for hidden patterns that can be used to predict future behaviour and help identify previously unknown relationships in the data. The acquisition of a data warehouse will enable:</p> <ul style="list-style-type: none"> <li>• Business analysts to perform a greater level of detail of analysis of the data without concerns about corrupting the data or having a limited window to operate in;</li> <li>• Constant availability –not dependant on market systems being online;</li> <li>• Key re-usable reports to be made readily available.</li> </ul>	
<p><b>Progress to Date</b></p> <p>Phase 1the Data Warehouse Infrastructure is due be delivered in July 2012</p> <p>Phase 2 Design and procurement phase for Data warehouse platform and tools is due to start Quarter 3 2012</p>	

Capital Project 9

Reporting Database Upgrade

The reporting database was originally made available by SEMO IT on the premise that there were to be no critical services/business operations to be built off the database. This requirement has since changed and there are now day-to-day operations depending on the availability of the database (managing reports, verifying the completeness of settlement data, performing market studies and market audits).

Currently, the reporting database is run on a single server with no backups available. In the event of an emergency there is no alternative source of information for the various dependent business users. SEMO wish to rectify this situation through the implementation of a more resilient Reporting Database

Progress to Date

The Reporting Database Upgrade is to be delivered in July 2012.

Capital Project 10

Oracle Database Server Version 2

As data demands increase there is a need for greater availability and performance of the market systems to support the ongoing needs of market participants. It is therefore imperative that the database is upgraded to facilitate these needs.

The existing SEMO database server will no longer be supported by DELL as its lifecycle is due to expire this year. Continued growth in data has meant the current database is struggling to maintain acceptable performance and requires significant maintenance from SEMO IT Database Administrators. Without a significant database upgrade there is a risk that the market systems will not be operating at their optimum levels. Upgrading the Database Server technology will help ensure that the market systems are operating on the most robust, reliable and secure levels. This proactive approach to database management will ensure that SEMO provides greater availability, reliability and performance of the market systems.

Progress to Date

Phase 1 of this project was brought forward and was delivered in July 2011. This phase delivered additional hardware and an upgraded File system.

Phase 2 will involve upgrading to Oracle Database Server version 11G and migrating to Linux in July 2012

Capital Project 11

New Communications Links

The use of the communication links has been steadily increasing over time and could potentially affect the operations of the Central Market Systems. These links are key infrastructure components of the Central Market Systems and are essential for providing fully redundant, consistently available and high performing systems across two locations. New communications links will provide SEMO with the ability to cope with increasing data demands and ensure that all of the benefits from any future Central Market System upgrades

are realised.

The loss of one link, which has occurred on a number of occasions, resulting in the considerable reduction in performance of all systems. Problems experienced include, participants being unable to submit bids, SEMO staff unable to carry out tasks, applications become unusable due to slow performance, and database stalling and affecting the operation of Central Market Systems.

Progress to Date

This Project is not due to start until 2012-13.

Capital Project 12

CMS Pre Production Environments

It is imperative that SEMO be in a position to investigate, test and diagnose issues in a timely and efficient manner, particularly where those issues impact on the operations of market participants. This can be better facilitated by the availability of new environments to investigate issues, test new releases and complete market analyses, ensuring the market remains operationally robust.

Currently, demand for pre-production environments is greater than availability. However, SEMO cannot compromise its test effort due to environmental constraints as the implications for the market are far too significant. The Technical Team need to have constant access to pre production environments, as ad hoc issues arise for which speedy resolutions are required. Similarly the Functional Team requires continual access to multiple environments to reduce the risk of delays in planned testing for the bi-annual deployments.

Progress to Date

The CMS Pre Production Environments will be commissioned and in place for the Testing and Market Trial phases of the Intraday Trading project. This will enable better analysis and testing as SEMO will for the first time have two identical production systems. This will dramatically reduce the duration of outages going forward. This project is due for delivery in January 2012.

Capital Project 13

Axapta Upgrade

The Axapta system is used to manage market finances and is essential to the operation of the Central Market Systems. The system is used for reconciling bank accounts, processing cash receipts, maintaining market ledgers, managing collateral and bad debt, managing market currency exposure, keeping accounting records for financial reporting and for processing payments to market participants. The current Axapta system is based on version 3.0 of this Microsoft technology and requires an upgrade as Microsoft will no longer support this version.

Progress to Date

The Axapta Upgrade project was delivered in May 2011. The Microsoft Financial Management tool formally known as Axapta has now been renamed Microsoft Dynamics. SEMO are no on the latest version of this Microsoft product (AX 2009). A further upgrade within the Price Control period may be required.

Capital Project 14

On-Line Help System

Currently, parties wishing to raise an issue or a query with SEMO must phone or email the SEMO Market Helpdesk. Stakeholders making follow-up inquiries on existing calls or previously raised queries must also phone or email the SEMO Market Helpdesk. The implementation of an on-line help system would allow external stakeholders submit a new query, view the status of any existing queries directly through a SEMO Help Desk portal. This would enable participants to track their queries at their own convenience.

Progress to Date

SEMO are gathering the business requirements from the various departments within SEMO. This business requirement gathering stage is due to be completed by December 2011. Delivery of this system is due in Quarter 2 2012.

Capital Project 15

Electronic Fax Solution

Fax communication is defined in the Trading and Settlement Code as one of the three valid communication channels, and is a vital form of communication in the SEM. As part of market communications SEMO sends and receives a large number of different fax communications. All outgoing fax communications are currently prepared, printed and faxed manually. All incoming communications are received, scanned, and filed manually. The current manual processes for fax communications has the potential for error or omission, may not be timely enough in certain circumstances, is difficult to co-ordinate across dual site operations, is open to security breaches, and does not provide auditable permanent records of incoming or outgoing communications.

While missing fax confirmations have been highlighted in previous audit reports, SEMO resources could be better utilised in ensuring core market functions are completed on time rather than manually managing fax transmittals. Therefore a need exists for an integrated electronic fax solution. The integrated electronic fax solution can receive and send faxes electronically, has the capacity to deal with business-critical time-dependent events such as Limited Communications Failure (LCF) and General Communication Failure (GCF) faxes, can send faxes to a single recipient or distribution list, can be viewed in electronic format by users in either the Dublin or Belfast, provides an audit trail of communications, can confirm successful transmission of all faxes sent, and can provide a secure environment for the receipt and storage of faxes thus reducing the risk of commercially sensitive data being lost.

Progress to Date

The business specification for this project has been compiled and the design agreed. SEMO

are now in the procurement phase of this project. Delivery date of Quarter 4 2012.

Capital Project 16

On-Line Registration System

The existing SEM registration process was devised ahead of the go-live in 2007. Since then SEMO has received feedback on the registration process from a number of stakeholders including, new and existing participants registering Parties and Units, as well as the TSOs, MDPs and SEMO internally. This feedback has identified the following difficulties with the current process:

- Confusion on the part of Applicants when completing the pack due to the complex nature of the data required;
- Poor validation of the registration pack prior to submission;
- Significant administrative overhead for SEMO;
- Inefficient dissemination of relevant information from the pack to TSOs and MDPs;
- Difficulty in converting applications into Market and TSO/MDP system setup.

A business need has been identified for an online registration system and associated document management functionality to replace the existing inefficient and error prone manual registration process. This would simplify the process both for Market Participants and Other Parties involved (SEMO, TSOs, MDPs), and significantly improve the process as a whole. The online registration system should decrease the workload for new participants entering the SEM and make the registration process less daunting and more transparent to participants.

Progress to Date

Delayed until year 3.

Capital Project 17

Training Environment (Internal)

Currently there are no training environments available in SEMO to train new hires or rotating staff in functions such as Pricings and Scheduling, Settlement, Funds Transfer and Credit Management etc. It is essential that additional Market Application environments are made available to allow SEMO to optimally train staff and thus reduce the potential of operational issues in the live systems. Without this environment there will always be the risk that issues could arise in the production environment due to a lack of experience on behalf of the trainee. Because staff rotation is key to ensuring that all functions of the market can be carried out in a contingency situation, there will always be a significant amount of training occurring, and for this reason a new environment along with better training will always be relevant and in the long run will reduce the cost to the market.

Progress to Date

The training environments will be delivered in conjunction with the Intraday Trading project.