



Single Electricity Market

Market Systems Development Plan Proposed Framework 3 (2009/10 and 2011)

6th September 2010
(Version 1.7)

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Distribution List

Once authorised:

Name	Organisation
CER	Commission for Energy Regulation
NIAUR	Northern Ireland Authority for Utility Regulation
Market Participants	

Table of Contents

1	Introduction	5
1.1	Purpose	5
1.2	Scope of Plan	5
1.3	MSDP Process	6
1.4	OVERVIEW OF SEM Systems / Functional Architecture	8
1.4.1	Market Infrastructure (MI) system.....	8
1.4.2	Scheduling and Pricing (MA).....	9
1.4.3	Settlement System.....	9
1.4.4	Invoicing System.....	9
1.4.5	Metering System.....	9
1.4.6	Credit Risk Management System.....	9
1.4.7	Finance System.....	9
2	Progress On MSDP 2 (2008/9-10).....	11
2.1	Implemented Changes.....	11
2.2	Progressed – Closed	13
2.3	Progressed With Further Work Required	15
3	Biannual IT Releases 2009-11	18
3.1	Benefits of a Bi-annual Release Strategy.....	18
3.2	Proposed Releases	19
3.2.1	October 2009 Release (Approved).....	20
3.2.2	April 2010 Release (Approved)	20
3.2.3	October 2010 Release (partially scoped)	21
4	Forward Work Programme	23
4.1	Policy-Led.....	24
4.1.1	Regional Integration - Market Coupling / interconnection (MSDP_0013)	24
4.1.2	Locational Signals (MSDP_0014).....	25
4.1.3	Ancillary Services Harmonisation (MSDP_0015).....	25
4.1.4	FUEL SECURITY (MSDP_0016)	25
4.1.5	Principles of Dispatch and the Design of the Market Schedule (MSDP_0017).....	26
4.1.6	Capacity Payments Mechanism (MSDP_0018).....	27
4.1.7	Global Aggregation (MSDP_0019).....	27
4.1.8	Fuel Mix Disclosure (MSDP_0020)	27
4.1.9	Zero VAT Settlement for Cross-Jurisdictional Flows (MSDP_0012)	28
4.2	Work or Assessment Committed.....	29
4.2.1	SEMO studies.....	29
4.2.1.1	MIP vs LR Analysis (MSDP_0034).....	29
4.2.1.2	Study of calculation of Eligible Availability for Energy Limited Generator Units (MSDP_0035).....	29
4.2.2	SEMO registration.....	30
4.2.2.1	SEM Registration Pack (MSDP_0033)	30
4.2.3	Mods With Further Potential Impacts.....	30
4.2.3.1	Generator Short Term Test (MSDP_0022)	30
4.2.3.2	Aggregated Generator Units (MSDP_0023)	31
4.2.3.3	Dual Rated Generator Units (MSDP_0024).....	31
4.2.3.4	Additional Market Data Transactions from SEMO to TSOs (MSDP_0025).....	31
4.2.3.5	Definition of Tariff Year (MSDP_0026)	32
4.2.3.6	Calculation of Modified Interconnector Unit Nominations (MSDP_0027).....	32
4.2.3.7	Loss Adjustment in Constraint and Make Whole Payment Calculations (MSDP_0028).....	32
4.2.3.8	Publication of 2 Year Outage Plans (MSDP_0029).....	32

4.2.3.9	Error Supplier Unit calculation (MSDP_0030)	32
4.2.3.10	Removal of Restriction on ASUs to DSUs (MSDP_0032)	33
4.3	Planned Areas of Investigation	34
5	SEMO IT Projects	41
5.1	Committed Changes	42
5.1.1	Hardware Requirements	42
5.1.2	Software Upgrades	42
5.1.3	Telecommunications Upgrades	43
5.2	Proposed Changes	44
5.2.1	Electronic Fax Solution	44
5.2.2	Additional CMS Pre-Production Environment	44
5.2.3	Changes to the Technical Architecture	44
5.2.4	Change Management System	45
5.2.5	On-Line Registration System	46
5.2.6	On-Line Help System	47
5.2.7	Treasury System	48
5.2.8	Central Market System Monitoring System	48
5.3	SEMO Web Site Functionality Update	49
5.3.1	General	49
5.3.2	Market Data - Dynamic Reporting	49
5.3.3	Market Data - Static Files	49
5.3.4	Market Operator Performance	49
5.3.5	Market Messages	50
5.3.6	Calendar	50
5.3.7	Notifications	50
5.3.8	Market Development (Modifications)	51
6	Additional SEMO activities	52
6.1	SEM Design Service (SDS)	52
6.2	Participant Training	52
7	Consultation Feedback	54
7.1	Bi-annual Release Strategy	54
7.2	Forward Work Programme	55
7.3	Market Operations Related issues	55
7.3.1	CMS Improvements & Processing Checks	55
7.3.2	Help Desk	56
7.3.3	Ad Hoc resettlements	56
7.4	Fuel Mix Disclosure	57
7.5	SEMO IT Projects	57
7.6	MSDP Forum	57
7.7	MSDP Timelines	58
7.8	SEM Design Service (from MSDP)	58
7.9	Other	58
7.9.1	Training	58
7.9.2	Website	59
7.9.3	The purpose of the MSDP is unclear	59
8	Appendices	60
8.1	Appendix A – Completed Changes (pre October 2009 release)	61
8.2	Appendix B - Work or Assessment Committed	64
8.3	Appendix C - Planned Areas of Investigation	66

1 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". SONI and EirGrid have developed this MSDP for submission to the Regulatory Authorities.

1.1 PURPOSE

This document comprises the Market System Development Plan (MSDP) developed by SEMO for the period from 1st November 2009 to 31st October 2011. This is the third MSDP (MSDP 3) and has been prepared to reflect the issues that SEMO faces in relation to the operation, administration and development of the Single Electricity Market (SEM). The MSDP also addresses some issues that may be led by Transmission System Operators (TSOs), but which will affect the SEM.

The MSDP will be publicly consulted upon by SEMO (under license requirement), with a report on the results of the consultation to be submitted to CER and NIAUR for subsequent approval.

1.2 SCOPE OF PLAN

The SEM successfully commenced on 1st November 2007. Since then, SEM has continued to develop, with the pace and volume of change increasing as the SEM evolves. Within the year 2007/8, the MSDP 1 was effectively a one year plan with specific emphasis on the SEM Day 1+ Project. The second MSDP 2 for 2008/10 outlined the Day 1+ Project scope and introduced a number of additional areas of consideration (SEM Potential Development and Changes).

MSDP 3 2009-2011 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** provides an update on MSDP2 2008-10. This section identifies work completed, work closed and work progressed with further ongoing requirements.
- **Section 3** gives an outline of the Biannual IT Release Strategy. This section also identifies the change request / defects being delivered in the October 2009 release along with the proposed content of the April 2010 and October 2010 Releases.
- **Section 4** highlights the 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 SEMO website.
- **Section 6** provides an update on two future areas that SEMO wish to provide particular operational support for.

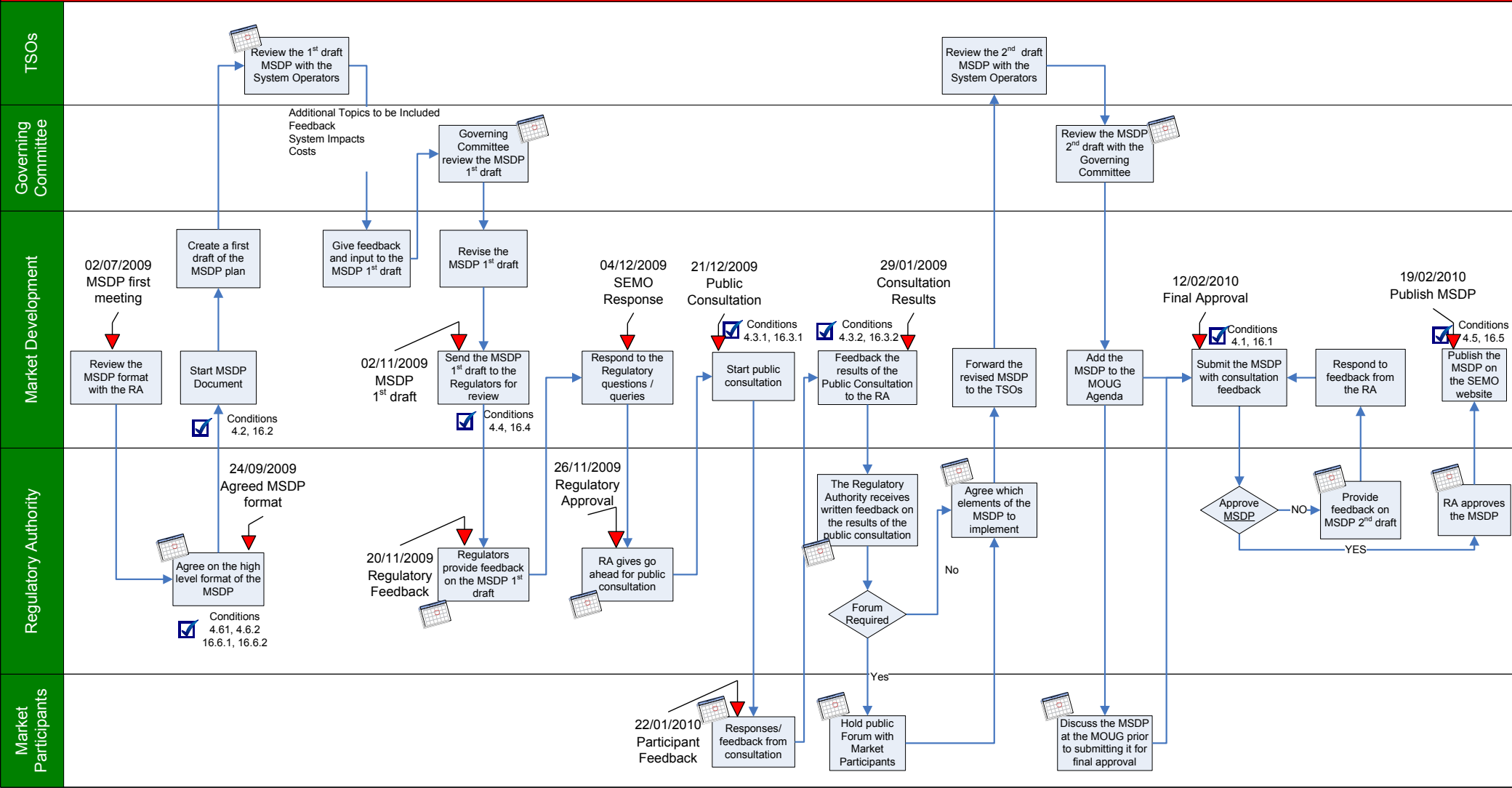
It should be noted that any approved changes to the CMS will require approval from the Regulatory Authorities. All costs associated with projects that are outside of the scope of the current price control can only be approved by the Regulatory Authorities during subsequent price controls.

1.3 MSDP PROCESS

The MSDP process (on page 7) illustrates the various roles, process steps and Market Operator license obligations that SEMO are required to carry out when developing a two year Market Systems Development Plan. Overlaid on these steps are provisional timelines which give an indication as to the duration of the overall development and approval process.

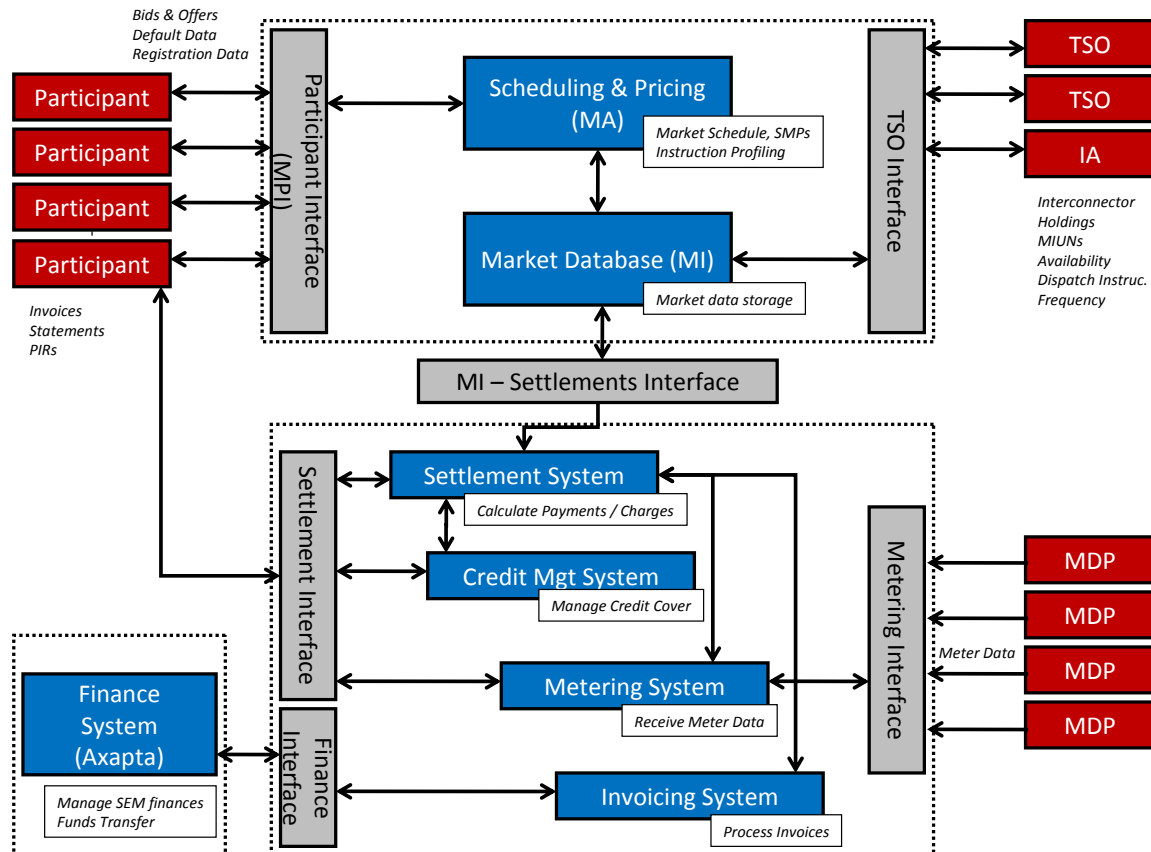
Market System Development Plan (Annual process)

2009-2011



1.4 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.



1.4.1 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.

1.4.2 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.

1.4.3 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.

1.4.4 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.

1.4.5 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.

1.4.6 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.

1.4.7 FINANCE SYSTEM

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

2 PROGRESS ON MSDP 2 (2008/9-10)

The MSDP 2 (2008-2010) described the work plan for SEMO in terms of its market development (along with associated systems development) activities. In particular, the MSDP 2 covered the following areas of SEMO's work:

- SEMO Day 1+ Project
- TSO Day 1+ Project
- Potential Developments and Changes
- SEM Design Authority
- SEMO Website
- Specific sections on Renewables and Interconnector industry discussions

The MSDP2 consultation was conducted in December 2008 and the responses have provided valuable input to the development of the MSDP3, in the following ways:

- **Timescales** - early publication and approval of the MSDP allows Market Participants to prepare for any impacts that may arise from the implementation of planned activities. SEMO is planning for the MSDP 3 to be consulted on, approved and published by December 2009.
- **Non-Code Changes** – Previously, there has been no clear mechanism by which non-Code changes are addressed. MSDP 3 therefore contains a detailed proposal for the future management and governance of all non-Code SEM change requests, specifically through the development of the SEM Design Service (SDS), as described in section 6.
- **CMS Releases** - MSDP3 09/11 explains in detail SEMO's response to Participant desire to have certainty on release timings and content, culminating in the development of the release strategy for all future CMS releases (see Section 3).
- **Impacts of Policy** – Previous consultation responses have cited uncertainty of the timelines with respect to changes resulting from regulatory or legislative policy. MSDP 3 contains a section that itemises all known policy issues that may impact the SEM in the foreseeable future (see section 4.1).

The remainder of this section summarises SEMO's progress since the MSDP2 08/10, in terms of what has been implemented, progressed, assessed or discarded.

2.1 IMPLEMENTED CHANGES

The SEM Day 1+ Project (completed in January 2009) included a number of changes that were discussed with and prioritised by the industry for inclusion. These included changes requiring Code Modifications, along with some changes considered important to the operation of the SEM. In parallel with the SEM Day 1+ Project, the TSOs established the TSOs Market Interface Committee, which managed the TSO Day 1+ changes and analysed a number of additional issues relating to potential changes in the SEM.

As part of the industry consultation on the scope of the Day 1+ Project, some items were considered in “Logical Groups – LG”. The LG-related changes prioritised for inclusion were as follows:

- LG001 - Ex-Post Loss of Load Probability Forecast.
- LG002 - Publication of the Required Credit Cover Report.
- LG008 - Screen Based Query of Registration Data.
- LG010 - SEMO Branding.
- LG011 - Maximum Value for Settlement Reallocation Agreements.
- LG012 - Unique Identification of Data Transactions.
- LG013 - Validation of Data for Operational Scheduling.
- LG015 - Validation of Market Interface (MI) to Settlements Interface.
- LG016 - Validation of SO/IA Data Transactions.
- LG017 - Inclusion of VAT Number on Settlement Invoices.

In addition to the identified Logical Group (LG) changes, a number of approved Modifications were also included in Day 1+ Project scope:

- Mod_86_07 - Publication of Shadow Prices.
- Mod_38_08 - Data Verification Period.
- Mod_43_08 - Application of Distribution Loss Adjustment Factors (DLAFs).

Finally, a number of non-Code dependent Change Requests (i.e. no Modifications required) were included within the Day 1+ Project scope. These included changes to the CMS or to business processes:

- Change to the exchange rate used for Capacity Settlement Reallocation Agreements.
- Manual input of the Future Risk Period Start Date.
- Transfer of Settlement Reallocation Agreement Data (SRAs) between the Market Participant Interface, Settlement and Credit Risk Management systems.
- Change Adjustment Amount in the Required Credit Cover (RCC) calculation.
- Mod_62_08 Modification to the timing of the Jurisdictional Error Supplier Unit (JESU) processing and publication related events.
- VAT for Future Risk Period Start Date.
- Credit Risk Report Republishing.
- Correction of Required Credit Cover Requirement.
- Application of VAT rate on invoices for revised Settlement.
- Associated Supplier Unit (ASU) trading site limit change from 20 to 100.

A description of each of the implemented changes listed can be found in [Appendix A – Completed Changes \(pre October 2009 release\)](#) .

2.2 PROGRESSED – CLOSED

The MSDP 2 (2008/9-2010) included a number of topics for further consideration. Since the MSDP 2, these items have been considered and closed by SEMO due to:

- Exclusion from the Day 1+ Project scope, leading to subsequent Modifications.
- For items not included in the Day 1+ scope consultation (referred to as a Potential Development or Change – PDC), assessment by SEMO in conjunction with TSOs, has concluded that changes to the CMS would not be appropriate or yield significant benefits to the SEM.

MSDP 2008 ID	Logical Group / Modification Title	Description
LG003 (excluded from Day 1+ Scope)	Calculation of Required Credit Cover	The Capacity Adjustment Factor (CAF) was provided as an interim method (via Section 7 of the Code) of calculating the Credit Cover Undefined Exposure for New or Adjusted Participants. LG003 was not included in the scope for the Day 1+ Project following the consultation process. Following further assessment, SEMO is delivering the enduring Code requirement without any changes to the CMS.
LG007 (excluded from Day 1+ Scope)	Interconnector Unit Data Transactions	The original Code allowed Participants to register multiple Interconnector Units per Interconnector; however the original CMS design did not allow this. Following consultation, this item was excluded from the scope of the Day 1+ Project and Modifications were subsequently raised and approved to restrict Participants to register only one Interconnector Unit per Interconnector.
LG009 (excluded from Day 1+ Scope)	Interconnector Error Units	The original Code included obligations relating to responsibility for the Interconnector Error Unit. Following the MSDP consultation, Modifications were raised and approved to change the obligations to be consistent with the CMS implementation.
LG018 (excluded from Day 1+ Scope)	Cancellation of Settlement Reallocation Agreements	This change proposed the removal of automatic cancellation logic for Settlement Reallocation Agreements when they exceed the Trading Payments or Capacity Payments. Following the consultation as part of the Day 1+ Project scoping exercise, it was concluded that this change is not required.
LG006 (excluded from Day 1+ Scope)	Format of Settlement Statements and PIRs	The original enduring obligations in the Code required previous and current values to be presented on Settlement Statements or PIRs, where appropriate. Following consultation, this item was excluded from the scope of the Day 1+ Project and a Modification was raised and approved to change the obligations such that they align with the CMS implementation.
Mod_56_08	Interconnector Registration Data	At Go-Live, Section 7 of the Code contained an interim provision requiring the Registration Data for Interconnectors to include whether the associated Interconnector may be dispatched at zero. A Modification has subsequently been proposed and implemented, making this data an enduring obligation upon registration (managed and stored manually by SEMO).
PDC_032	Validation of Interconnector Unit Nominations	In the MSDP 2, SEMO indicated that the TSOs were evaluating the merits of making changes to the interface between the CMS and MITS, to ensure that data provided to MITS is complete and accurate. Given the wider consultation on Regional Integration

MSDP 2008 ID	Logical Group / Modification Title	Description
		(which particularly focuses on the role of Interconnectors), it has been concluded that this item should be analysed as part of the wider consultation discussions.
PDC_023	Modelling of Generator Unit Forbidden Zones	During 2009, the TSOs analysed the merits of including additional restrictions on Commercial and Technical Offer Data relating to Generator Unit Forbidden Zones. The TSO analysis concluded that there would not be sufficient rationale at this stage for proposing a change to the Code and associated CMS (the impact of such a change being potentially significant and costly).
PDC_027	Communications between MDPs and the SMO	During 2009, the TSOs raised various Modifications which sought to provide additional clarity and accuracy for Unit registration processes. In addition, Modification Mod_13_09 introduced new provisions which allow External Data Providers (including MDPs) to raise Data Queries where issues are identified with the data provided by them. As this Modification is now implemented, it is not viewed that further significant process changes are required.

2.3 PROGRESSED WITH FURTHER WORK REQUIRED

Some issues relating to potential future changes to the SEM may take time to agree, design and implement. As a result, there are various issues that have been progressed since the previous MSDP and for which there is further work required. These issues have been progressed in the context of considerations by and discussions with the Regulatory Authorities, Participants and from discussions within the Modifications Committee (and associated Working Groups). As further work on each of the topics listed below is required, each is covered within the MSDP 3 Work Plan.

Topic	Progress To Date
Interconnection (see section 4.1.1).	During 2008 and 2009, the TSOs developed (in consultation with the RAs) various options which would increase the opportunities for TSOs to perform Interconnector-related trades to preserve system security in the SEM as cost effectively as possible. This was followed by RA led discussions involving the TSOs and industry to discuss trading on the existing Interconnector and the Code provisions (and in some case restrictions) to Interconnector trading. A consultation paper published on the "Regional Integration" is described in section 4.1.1. It is expected that further work on the options to promote intraday trading and integration will be required, following which Modifications and systems design and implementation work will be required (see SEM Regional Integration, A Consultation Paper 10th September 2009 SEM-09-096).
Zero VAT Settlement for Cross-Jurisdictional Flows (see section 4.1.9).	Since SEM Go-Live, SEMO has undertaken significant analysis and design which would deliver a VAT treatment across the SEM jurisdictions that would be compliant with the requirements of the Revenue Authorities in RoI and NI. Once approved, the proposed changes will need to be implemented via changes to the CMS.
Error Supplier Unit Settlement and Reporting.	Currently, an interim calculation is performed to support the settlement of Error Supplier Units (ESUs) in the SEM. The Regulatory Authorities are in the process of deciding on the most appropriate enduring calculation (with SEMO involved in various discussions since Go-Live). If the Regulatory Authorities conclude that the enduring calculation should be as set out in clause 4.91 of the Code, there will need to be corresponding changes to the CMS.
Validation of Registration and Technical Offer Data (see Section 3.2.2)	At SEM Go Live, an interim process for the validation of Registration and Technical Offer Data was implemented. This was a manual process, managed by SEMO and the TSOs. Following significant industry consultation, an enduring solution was developed by SEMO and the TSOs, resulting in an approved Modification (Mod_47_08) and associated changes to CMS design to deliver a more flexible and automated validation process. The CMS changes are due for implementation in the October 2010 CMS release.
Variable and Ex-Post Flattening Power Factors (see section 4.1.6).	The TSOs raised a Modification during 2008 (Mod_44_08), proposing the implementation of two Flattening Power Factors for the calculation of Variable and Ex Post LOLP used in the calculation of Capacity Payments. This Modification was Recommended for Approval by the Modifications Committee; however the Regulatory Authorities deemed it as Further Work Required. It was subsequently identified that this proposal should form part of the medium term review of the Capacity Payments Mechanism (see section 4.1.6) and was withdrawn pending the recommendations of the review.
Publication of Aggregated Loss Adjusted Net Demand (see section 5.3).	This Modification (Mod_87_07) to publish additional data relating to the volumes of the Error Supplier Units, has been approved by the Regulatory Authorities for implementation in line with the delivery of the enhanced SEMO website.

Topic	Progress To Date
Tariff Year Alignment (see section 4.2.3.5).	As part of the implementation of MOD_43_08, further issues relating to the availability of "approved" loss adjustment data from TSOs and DSOs have been identified. As a result, an enduring Modification has been raised (Mod_24_09) which will align the timescales for the calculation of TLAFs by TSOs with those timescales upon which DLAF calculation is based (the Tariff Year). It is expected that this will affect TSO business processes, but will also have minor impact on SEMO in terms of its publication activities with respect to TLAFs, DLAFs and CLAFs.
Calculation of Modified Interconnector Unit Nominations (see section 4.2.3.6).	Currently, SONI is contracted to perform (using an existing system and processes) the calculation of Modified Interconnector Unit Nominations (MIUNs) by SEMO. In the context of new Interconnectors due to be registered in the future, the calculation of MIUNs for new Interconnectors needs to be considered (e.g. calculation within the CMS).
Generator Short Term Test	In November 2008, the TSOs submitted a Modification (Mod_65_08) which proposed the introduction of a "Short Term Test" status and associated rules to account for "within day" Generator testing. Currently, such Generator testing is facilitated by TSOs via a workaround process which is not considered an enduring solution. If this Modification is implemented, it will require significant changes to the SEM interfaces, MSP Software and Settlement System. At Meeting 25 of the Modifications Committee Meeting, this proposal was recommended for approval, following a high-level impact assessment by the CMS vendor. If the SEM Committee recommends it for approval, further work needs to be done with the vendor to finalise the implementation details.
Aggregated Generator Units	Following the submission of Modification Mod_05_08, which enabled the participation of Generator aggregators in the SEM, SEMO and the TSOs have been significantly involved in the development of the proposal through to implementation. Furthermore, the TSOs have been developing a contract with current and future Participants registering Aggregated Generator Units to address Grid Code-related items governing system operations.
Dual Rated Generator Units (see section 4.2.3.3).	Modification Mod_34_08 proposed changes to the treatment of Dual Rated Generator Units, addressing various artificial "price spikes" observed during early SEM operation due to the treatment of Units with dual fuel characteristics in the SEM. SEMO has undertaken extensive analysis and modelling of the proposals, supporting the decision-making process of the Modifications Committee. This Modification was recommended for approval in September 2009 and, if approved, will be considered for implementation in a future CMS release.
Constraint Data provision to TSOs (see section 4.2.3.4).	Prior to SEM Go-Live, the TSOs raised a Modification (Mod_68_07) which required various data to be provided by SEMO to support constraint data analysis and reporting by the TSOs. Since then, various discussions have been held and analysis undertaken by SEMO and TSOs to identify the most appropriate way of replacing the current interim provision of this data by a robust, enduring solution. These discussions continue, with various options being developed and assessed.
Unit Registration Processes (see section 4.2.3.10).	During 2008 and 2009, the TSOs, in consultation with SEMO, developed and proposed various Modifications to clarify and enhance the Unit registration processes. Whilst these Modifications were all approved and implemented, SEMO and the TSOs are proposing to continue to discuss and propose ways in which the Unit registration processes can be improved or made more transparent.
Eligible Availability for Energy Limited Generator Units (see section 4.2.1.2).	In order to support the decision by the Modifications Committee on the enduring calculations of Eligible Availability for Energy Limited Units, SEMO has performed various detailed analysis of the effects of the interim calculation. This has resulted in the interim calculation being extended into 2010, with SEMO being requested to providing similar analysis during 2010.

Topic	Progress To Date
Aggregate Payments for Invoices	SEMO proposed Modification Mod_49_08 in September 2008 along with supporting analysis, which allows Participants to make aggregate payments for invoices. This proposal has been approved, with SEMO designing the associated CMS changes.
Publication of Actual Load Summary	Modification Mod_88_07 requires Daily Actual Load data to be published by SEMO. This Modification has been approved, with the resulting changes designed by SEMO due to be deployed in the April 2010 CMS release.
Nested Wind Dispatch Instructions	Following the identification with issues with the logic relating to wind dispatch instructions, SEMO and the TSOs identified various changes to ensure that incorrect calculation of settlement amounts for Wind Power Units does not occur. The resulting changes are planned for deployment in the October 2009 CMS release.

3 BIENNIAL IT RELEASES 2009-11

Following the successful deployment of the SEM Day 1+ Project, SEMO consulted with the industry (via direct meetings with the Regulators and presentations to both the Market Operator User Group - "MOUG" - and Modifications Committee) as to the strategy of planned future changes and releases to the CMS. From these meetings and the consideration of views expressed from the consultation in MSDP2, participants supported a structured IT release strategy. As a consequence of these considerations and SEMO experience, SEMO IT has now moved to a biannual IT release strategy. Regular IT releases allows SEMO IT to co-ordinate its IT resources, and retain vendor expertise and support for the CMS. This biannual release strategy should reduce development costs and allow focus on the implementation of key market rules that will benefit the SEM.

For each CMS release (April or October each year), SEMO publishes a cut-off date to participants approximately eight months prior to the planned release date. All changes formally received and approved by the SEM Committee by this cut-off date will be considered for inclusion in scope for a future CMS release. Once the proposed scope of a release is determined, it is submitted to the Regulatory Authorities for approval. Once approved, SEMO ensures that all changes implemented are subject to extensive testing prior to release into production (i.e. the "live" system). This process includes:

- Requirements review and matching (ensuring that delivery matches requirements).
- Fix testing (ensure that defects identified are addressed and resolved).
- Testing (ensuring that new changes do not compromise existing functionality).
- Sanity checking (applying appropriate reasonableness checks).

3.1 BENEFITS OF A BI-ANNUAL RELEASE STRATEGY

SEMO recognises that there are internal and external pressures to implement change in a timely and accurate manner. As a result, SEMO does not believe that an ad-hoc or frequent release approach is appropriate.

SEMO therefore believes that a bi-annual release strategy represents a balanced and prudent approach. This approach is the standard in other similar electricity markets and has benefits including:

- Clarity of release schedule and associated cut-off dates for change request submissions.
- Known scope allows more effective cost negotiation with CMS vendors (SEMO has, in the context of a bi-annual release strategy, negotiated a three year contract with its vendors which delivers a 21% reduction in the costs originally quoted).
- Strict and co-ordinated quality control process, resulting in reduced outages due to:
 - Less emergency releases (i.e. those to fix critical defects).
 - Fewer defects fixes in future releases.
- Structured and planned testing phases (Factory, System Integration, UAT, Market Test etc).
- Reduced testing overhead (dedicated resources during planned testing phases).
- More efficient SEMO and Market Participant resource co-ordination.
- More robust CMS, enhancing confidence in the SEM.

3.2 PROPOSED RELEASES

Since SEM Go-Live, SEMO has deployed 17 releases, 9 of which were planned releases (including SEM Day 1+), the remainder being emergency releases to address critical defects encountered during live operations. These releases have been on an ad-hoc basis, with the timing of releases (with the exception of the Day 1+ Project) being determined based on the needs of live operations. However, SEMO believe that the bi-annual release strategy provides additional clarity to Participants, allowing internal planning and design activities to be scheduled in advance.

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.

As there is no current forum within which non-Code change requests to the CMS can be considered, SEMO has invited any party to submit change requests for consideration for inclusion within the scope of a future release. SEMO has then prioritised these non-Code change requests and proposed a release scope based on SEMO & vendor resource limitations and allocated hours. Any proposed changes that are not included within scheduled releases are maintained in the SEMO work plan for future consideration. SEMOs proposals for a SEM Design Service(SDS) and Change Control Board with industry representation are aimed at formalising this process and making it more inclusive.

As a result, items to be included in scope for a future CMS release may be:

- As a result of approved Modifications (MOD);
- As a result of Change Requests raised by SEMO, External Data Providers or Participants, to increase the effectiveness of SEMO, or to minimise risks to SEM operation (SEM);
- Software patches and upgrades (which would not be prioritised by the SDS); or
- Fixes for CMS defects identified (these are not discussed within this MSDP and would not be prioritised by the SDS).

These primary categories outlined above are indicated within the items allocated to approve or potential future release scopes (see sections 3.2.1 to 3.2.3). The following sections do not include details of any defect fixes identified and scheduled for deployment.

For all changes included in known future releases, MSDP 3 assigns a unique identifier for reference (e.g. MSDP_0001).

3.2.1 OCTOBER 2009 RELEASE (APPROVED)

The following scope for the October 2009 CMS release has been discussed with and approved by the Regulatory Authorities.

MSDP Id (CR Source)	Title	Description
MSDP_0001 (MOD_54_08)	Warning Limit Above Default Warning Limit	Change, to enable specific Market Participant Warning Limit values (Credit Cover) to override the default Code Participant value, even if the specific Market Participant Warning Limit value is greater than the default Code Participant value.
MSDP_0002 (SEMO)	Sort Code Validation against Customer Information	Change to the Market Participant interface so that sort code validation is performed against the customer bank account information and not the bank group.
MSDP_0003 (SEMO)	Transfer of additional results from MA to MI Database	Change to the Dispatch Schedule Publishing (DSP) module in Market Applications (MA) System, to transfer additional results to the Market Interface (MI) Database and support future publication requirements.
MSDP_0004 (MOD_49_08)	Axapta - CRM Interface	Modification to systems interfaces to allow single payments to be matched with multiple invoices.
MSDP_0005 (SEMO)	Nested Dispatch Instructions (for Wind)	Currently, the CMS do not interpret various valid sequences of Dispatch Instructions. The change proposed ensures that Wind-specific Dispatch Instructions (e.g. CURL, CRLO, LOCL, and LCLO) are correctly interpreted and mirror likely system dispatch logic.
MSDP_0006 (SEMO)	Invoices sent to correct side of ledger	Change to the criteria by which the Settlements-Finance interface determines if an invoice relates to sales or purchases.
MSDP_0007 (SEMO)	Reopening the Gate without Standing Bid Conversion	Change to the process by which the DAM_OPEN (Market Open) event is used within the Market Operator Interface.

3.2.2 APRIL 2010 RELEASE (APPROVED)

The proposed scope for the April 2010 release was developed and prioritised by SEMO, based on:

- approved Modifications with CMS implications;
- anticipated guaranteed capacity from the vendor; and
- known SEMO resources available to support the release.

MSDP Id	Title	Description
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MSDP_0008 (MOD_88_07)	Actual Load Summary Report	Modification Mod_88_07 is approved, requiring the publication of “daily actual load”, four days after the Trading Day. This change delivers the required report, via both the MPI and the SEMO website.
MSDP_0010 (SEMO)	Data Transfer Service	A data transfer service will be required to extract data from the CMS database and make it available to the SEMO Website (noting that the SEMO website developments already have Regulatory approval).
MSDP_0011 (SEMO)	Day 1 Specification does not match the publication requirement in the Code for Load Forecast Report	Currently, the Code implies that Load Forecast publications should begin at midnight (i.e. the first Settlement Period in the Settlement Day). Currently, the affected reports begin at the start of the Trading Day (i.e. 0600). This change will align the reports with the Code requirements.
MSDP_0066 (SEMO)	Treatment of Interconnector Units when no COD submitted	Currently, Interconnector Units may submit default Commercial Offer Data (COD) in the CMS, however the Code does not allow for this. This change would align the CMS with the provisions of the Code, by removing the ability of Interconnector Units to have Default Data within the CMS.
MSDP_0048 (SEMO)	Entry of Exchange Rates	At present, the CMS require Exchange Rates to be entered for both the exchange rate from £ to € and also € to £ separately. This could lead to errors where the exchange rate is entered such that the two values are inconsistent. SEMO is therefore considering a change the CMS to have a single Exchange Rate value entered, removing the risk of such errors occurring in the future.
MSDP_0067 (SEMO)	MPI User Effective Dates in the past	SEMO users may at present only be created in the MPI with an effective date of the following day (i.e. tomorrow), with its actions restricted to data equal to or following the effective date. This has caused various issues with loading meter data files for historical periods, (e.g. M+13 and M+4). In order to avoid the need for vendor script support to address such issues, it is proposed that an additional user type is implemented for SEMO, which will allow registration of new users with effective dates in the past.
MSDP_0044 (SEMO)	Invoice Job – Confirmation for approval of Invoices.	Within the CMS, there is no existing requirement to confirm the selection to approve invoices. This could result in invoices being approved in error, with no confirmation of the action being required. The proposed change would introduce a confirmation step prior to the invoices being approved within the CMS.
MSDP_0045 (SEMO)	Invoice Job – Default of Self-Billing Invoice due dates.	Currently, the CMS do not allow operators to define the due date relating to Self Billing Invoices with respect to a billing run. However, this functionality already exists to define the due date for Invoice billing runs. This possible change would replicate the existing Invoice due date functionality for Self Billing Invoices, whilst maintaining flexibility to adjust the due dates as appropriate.
MSDP_0053 (SEMO)	Meter Data Loading Requirements	A change is being proposed which will enable operators to submit Meter Data files on behalf of MDPs (in exceptional circumstances), with this occurrence being clearly reported within the CMS. This would support the maintenance of SEM operations in exceptional circumstances.

3.2.3 OCTOBER 2010 RELEASE (PARTIALLY SCOPED)

Due to the long lead in time for some of the outstanding Modifications SEMO have received Regulatory approval for the early development of the following three modifications:

- Enduring solution for validation of Technical Offer Data`
- Cross Border VAT
- Registration – Additional Validations

All Modification Proposals going forward will be placed into a queue based on the chronology of their approval from the SEM Committee.

MSDP Id CR Source	Title	Description
MSDP_0009 (MOD_47_08)	Enduring solution for validation of Technical Offer Data	Following approval of the widely consulted Modification, SEMO is designing the CMS changes required to deliver the approved provisions of the Code. This modification will provide an automated solution for validating TOD, allowing Participants to submit pre-approved complete TOD sets
MSDP_0012 (MOD_66_07)	Cross Border VAT ¹	This change will deliver changes to settlement calculations and will split charge amounts currently displayed on the invoice into intra-jurisdictional and inter-jurisdictional (Cross-border) trade. The applicable VAT rates will also be displayed
MSDP_0041 (SEMO)	Registration – Additional Validations	The current set of registration data validations can allow registration configurations that are not valid, causing issues and requiring many manual scripting updates. SEMO has developed possible changes to the CMS (not requiring Modifications) which will reduce the instance of such issues and increase the accuracy of data passed to the CMS databases.

¹ The Revenue Authorities have directed SEMO to change “as soon as possible” the treatment of “cross border VAT” to a methodology that is acceptable to both authorities. As such, SEMO considers this change to be essential for inclusion in the October 2010 release.

4 FORWARD WORK PROGRAMME

In the next two 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.

SEMO will therefore clearly be involved in ongoing industry-wide discussion on the options and likely impacts of those changes identified to be progressed. Furthermore SEMO will continue to provide support to the industry in developing accurate and robust Modification Proposals, along with assessing, designing, prioritising and implemented the resulting changes to the CMS. In this context, the forward work programme is split into the following three sections:

- **Policy Led** – longer term policy initiatives
- **Work Committed** – work that SEMO have committed to with participants and the Regulators
- **Planned Areas of Investigation** – immediate market changes which require further analysis and investigation.

which are detailed in sections 4.1 to 4.3.

4.1 POLICY-LED

In response to legislative requirements and policy considerations, potential future changes to electricity market provisions in the SEM may emerge. Currently, there are a number of such initiatives, which potentially represent future changes to the current market arrangements. Whilst these are often longer-term initiatives where policy or legislation dictates change to the SEM arrangements and its supporting systems, early engagement and interaction is vital to ensure that SEMO meets its obligations to comply with all relevant legal requirements and remains responsive to the current and future needs of the electricity market across NI and RoI.

4.1.1 REGIONAL INTEGRATION - MARKET COUPLING / INTERCONNECTION (MSDP_0013)

Under EU Directive 2003/54/EC – “concerning common rules for the internal market in electricity...”- and EU Regulation 1228/2003 - “on conditions for access to the network for cross-border exchanges in electricity”, SEMO sees a requirement in the short to medium term to facilitate the introduction of additional Interconnectors. SEMO is conscious of the RAs forward work programme in this regard and intend to support this work.

EU legislation requires cross border transmission capacity to be allocated on a non-discriminatory basis through market arrangements linking the two issues. Furthermore, the European Regulators' Group for Electricity and Gas (EREG) has established seven regional electricity markets, with the SEM being part of the France-UK-Ireland (FUI) regional grouping. In response to the legislative requirements, the Regulatory Authorities are consulting on ways in which interconnector capacity (both now and as additional Interconnectors are commissioned) can be most appropriately allocated. This consultation (SEM Regional Integration, [document reference SEM-09-096](#)) is ongoing and includes options including intra-day trading (both for Participants and allowing TSOs to maintain security of supply and manage constraints), balancing mechanisms, and explicit and implicit auctioning. In particular, this work will consider aspects of Interconnector operation that must be carried out for planned future Interconnectors and the impacts of Market Coupling as a medium term option. The impact of the options on the CMS, TSO, IA and Participant systems will have to be investigated.

With greater interconnection scheduled for the island of Ireland consideration will have to be given to facilitating, in a timely manner, the commissioning and operational policies and procedures needed in the market. To address this, the RAs will set up a industry working group to discuss. This will include:

- Examination of the trading on the existing Interconnector to ensure that any modifications to Interconnector Rules do not create barriers to trading on the existing interconnector (led by RAs).
- Re-evaluation of the Rules pertaining to Interconnection, such as Interconnector Administrator function, calculation of MIUNs and timing of Interconnector transactions.
- Examination of the feasibility of intraday trading on Interconnectors in SEM.
- Ensuring compliance of the CMS with congestion management guidelines.
- Implementation of any process and systems changes which may arise from the above.

4.1.2 LOCATIONAL SIGNALS (MSDP_0014)

Since 2006 there have been a number of consultations and publications regarding harmonisation of tariffs and transmission locational signals on the island of Ireland. Following request by the Regulatory Authorities, the TSOs have developed an options paper (Methodology Options for Locational Signals, [document reference SEM-09-060](#)), undertaken discussions with various interested parties and recommended a number of objectives for the methodologies under investigation (including cost reflectivity, transparency, predictability, non-volatility, the promotion of efficient future network planning, and short run efficiency).

As loss adjustment factors (distribution and transmission) are an integral component of the SEM market rules (e.g. in defining the Bidding Principles – from which SMPs are derived – and in adjustment payments and charges due), it is likely that some of the possible options would have significant impacts on the CMS, along with potential impacts on TSO and MDP systems providing data to support SEM operations.

4.1.3 ANCILLARY SERVICES HARMONISATION (MSDP_0015)

Currently, various payments and charges are managed outside the SEM by TSOs. Most of these relate to Ancillary Services costs for services necessary for the secure operation and restoration of the electricity system. The arrangements for the determination and payments of such costs have, historically, been independently managed in NI and RoI. Harmonised, all-island arrangements for Ancillary Services are due to be introduced in Feb 2010 (see Regulatory Authority document 09-090).

It is possible that changes in the following areas will impact on the SEM CMS:

- Development of new charging arrangements for generator testing
- Consideration of new or enhanced ancillary services

These will necessitate discussions with SEMO, analysis of potential impacts and, if required, input to the development and progression of Modifications to the Code.

4.1.4 FUEL SECURITY (MSDP_0016)

In the island of Ireland, there is significant reliance on natural gas for electricity generation, increasing the risk of there being insufficient capacity to meet demand in the event of a natural gas supply shortage. In RoI, being able to run on a secondary fuel is a Generator licence condition. In NI, generators are obliged to comply with the NI Fuel Security Code.

In January 2009, CER published a [Decision 09/001 "Secondary Fuel Obligations on Licensed Generation in the Republic of Ireland"](#), which strengthens the obligations on Generators with respect to their role in relation to security of electricity supply and to introduce a remuneration mechanism for

meeting specific obligations. As a result, EirGrid is currently developing the necessary arrangements for testing and remunerating generators for secondary fuel testing.

In Northern Ireland, SONI is working with NIAUR to enact an updated set of provisions within a Fuel Security Code (along with associated negotiations with Generators), and a consultation on this topic has recently closed.

The provisions being developed in each Jurisdiction are intended to be structured to allow full harmonisation at some stage in the future (the Regulatory Authorities have indicated that it is not appropriate for harmonised arrangements to be developed at this stage). SEMO will continue to monitor these developments to ensure that any potential changes to SEMO systems or processes arising out of this work will be identified as early as possible.

4.1.5 PRINCIPLES OF DISPATCH AND THE DESIGN OF THE MARKET SCHEDULE (MSDP_0017)

EU Directive 2001/77/EC –“on the promotion of electricity from renewable energy sources in the internal electricity market.” sets out national indicative targets for electricity produced from renewable energy sources by 2010.

The indicative target for Ireland for energy under this Directive is 13.2% by 2010. The UK has an electricity target of 10% from renewable generation. The Department of Enterprise Trade and Investment’s Strategic Energy Framework for the proportion of electricity that is generated from indigenous renewable sources by 2012 contains a current target of 12%. The Irish Government’s White Paper on Energy, the Irish Government’s energy policy framework for the period 2007-2020, sets a target of 33% of electricity consumption from renewable sources by 2020. A further target of 40% was announced following the results of the All Island Grid Study.

In the UK, the Energy White Paper also contains a target to see renewable supplies grow to 10% as a proportion of energy supplied by 2010, with an aspiration to double this level by 2020. The Department of Enterprise Trade and Investment’s (DETI) Renewables target is 12% by 2012, of which 15% should be from non-wind renewable sources, as stated in DETI’s Strategic Energy Framework for Northern Ireland, published in June 2004. Finally, the Renewables Obligation Order (Northern Ireland) 2007 contains a target of 6.3% of total energy supplies to come from renewable sources by 2012.

In February 2008, the Regulatory Authorities published a consultation relating to the treatment of increasing levels of wind generation in the SEM. Following responses, a further paper was published in July 2009 (“Principles of Dispatch and the Design of the Market Schedule in the TSC”, [document reference SEM-09-073](#)), which addresses issues raised and focuses particularly upon generation dispatch and on the design of the “unconstrained schedule”. This paper is wide-ranging, with all potential options having some impact on the CMS. As a result, SEMO will be required to participate in these discussions and provide assessment of impacts, costs and implementation timescales for preferred options as they emerge from the consultation process.

It is likely that this programme of work will incorporate various issues considered by the TSOs (and discussed with SEMO) during 2009, including:

- Wind Dispatch Instructions not currently considered by the CMS (including frequency regulation instructions).
- Treatment of Firm/Non-Firm Access.

Working in partnership with the TSOs and RAs on Wind in SEM, SEMO intends to identify the implications of different policy changes on the processes and systems that may arise as a result of this work, especially in relation to the Dispatch and Scheduling work, the impact on rules and systems could potentially be significant. SEMO is aware of the importance of implementing the policy expediently and will need to undertake analysis to identify:

- Potential Modifications to the Code.
- Potential changes to SEMO business processes.
- Potential changes to CMS.

4.1.6 CAPACITY PAYMENTS MECHANISM (MSDP_0018)

On 9th March 2009, the SEM Committee announced a medium term review of the SEM Capacity Payments Mechanism (CPM) and published a consultation paper (document reference SEM-09-023). This review aims to examine if the current design of the CPM can be further improved to optimally meet its defined objectives, in particular to provide signals for new entry/investment and to reward plant and capacity in accordance with its performance. Furthermore, this ongoing review will examine the distribution of the capacity pot among generators and the calculations for payments by suppliers. The related Modification raised by the TSOs in September 2009 (Mod_44_08) and previously discussed with SEMO will be considered as part of this review.

Any change to the CPM is likely to have a significant impact on the CMS and SEMO operations.

4.1.7 GLOBAL AGGREGATION (MSDP_0019)

It has been recognized for some time that full retail competition as well as other drivers for more accurate metering will require global aggregation. The implementation of this will have impacts on the TSC and CMS e.g. in the treatment of the Error Supplier Unit. Currently, the Error Supplier Unit calculated volume is used as the settlement volume for the host energy supplier in each jurisdiction, as Global Aggregation has not been implemented. In order to manage the Error Supplier Unit volumes post implementation of a Global Aggregation solution, Modifications will be required to the Code (see MOD_34_09) and further changes will be required to the CMS to implement these new rules.

4.1.8 FUEL MIX DISCLOSURE (MSDP_0020)

EU Directive 2003/54/EC requires each Member State to ensure that Electricity Suppliers make information on the contribution of each energy source to the overall fuel mix available to end customers. The responsibility for discharging this obligation is with the Regulatory Authorities (CER in RoI and NIAUR in NI).

Following industry discussion and consultation, SEMO was appointed in July 2009 as the interim body responsible for the calculation of fuel mix data. Once the required data has been calculated and verified by SEMO, it is to be provided on an annual basis to Suppliers registered in the SEM.

In order to discharge its responsibility with respect to fuel mix disclosure, SEMO is investigating the development of systems/tools that will facilitate the accurate and timely delivery of the data required. This will impact on both resources to manage the process, along with any new or amended systems required.

4.1.9 ZERO VAT SETTLEMENT FOR CROSS-JURISDICTIONAL FLOWS (MSDP_0012)

Prior to Go-Live, the treatment of VAT (via a blended jurisdictional VAT rate) was agreed with the Revenue Authorities in NI and ROI. However, the Revenue Authorities require the current treatment to be changed “as soon as possible”. Whilst significant discussion, design and costing already have been carried out, further work is required to ensure Revenue Authority compliance and design the resulting changes to the CMS. It is proposed that this change is implemented in the October 2010 release of the CMS.

4.2 WORK OR ASSESSMENT COMMITTED

During the year many new issues, initiatives or proposed changes (including Modifications) have been raised since the last MSDP. As a result, there are various areas of work that need to be further developed and which are ongoing or committed to. This includes Modifications that are at an advanced stage of discussion or development, or where SEMO has already committed to work on behalf of the SEM. These areas of committed work are categorised as follows:

- SEMO studies.
- SEMO registration.
- Modifications with further potential impacts.

Note the October 2009 release of committed work is detailed in Section 3.2.1

4.2.1 SEMO STUDIES

SEMO Studies are generally assignments of work which have been commissioned by the Regulators to review the current operational procedures within the SEM and to ascertain whether these procedures / algorithms are accurate and sufficiently robust for current market operations .

4.2.1.1 MIP VS LR ANALYSIS (MSDP_0034)

SEMO has committed to completing a detailed analysis of the two solvers provided by ABB for the CMS during the latter half of 2009. These solvers use the Lagrange Relaxation (LR) or Mixed Integer Programming (MIP) methods to determine the unit commitment schedule in the SEM. This SEMO study is examining the effects of using the two different solvers (undertaking a number of tailored studies), along with assessing the potential guidelines that will govern the use of the two solvers in the future.

It is expected that the results of this study will form the basis of further industry discussions regarding the use of the two solvers available.

4.2.1.2 STUDY OF CALCULATION OF ELIGIBLE AVAILABILITY FOR ENERGY LIMITED GENERATOR UNITS (MSDP_0035)

The enduring calculation of Eligible Availability for Energy Limited Generator Units has been the subject of various discussions and Modifications (e.g. Mod_23_09) since the SEM was designed. As a result of this, SEMO was asked during 2009 to undertake analysis of the interim and enduring calculations as presented in clauses 7.54-7.57 and 5.103-5.106 respectively. This analysis was completed, resulting in a decision by the Modifications Committee that the interim calculations should remain valid until 2010.

SEMO was asked by the Modifications Committee to provide similar analysis on an annual basis. SEMO outlined the requirement to collate data, replicate calculations and present the findings would require a resource commitment. It was decided that the materiality of the issue did not justify the

commitment to carry out this work on annual basis. It was decided to keep it under review on an annual basis or when any additional energy limited units register in the SEM.

4.2.2 SEMO REGISTRATION

All Parties intending to trade, buy or sell energy in the market must complete the Participant registration process. The registration processes consist of two major steps:

- Step 1: Party registration (for accession to the market): registration as a Party to the Code
- Step 2: Unit registration (for participation in the market): a Party becomes a Participant by registering Unit(s)

4.2.2.1 SEM REGISTRATION PACK (MSDP_0033)

During 2008 and 2009, the TSOs (in consultation with SEMO) developed a number of proposals which clarified and enhanced the registration process in the SEM. As part of these discussions, it was proposed that a more automated Registration Pack should be developed to ensure ease of use, completeness and accuracy of the information and to support validation by SEMO, MDPs and TSOs of the data provided by Parties/Participants when submitting registrations.

SEMO has committed to developing and implementing an enhanced Registration Pack, which has already been discussed extensively. It is likely that interim improvements will be delivered by SEMO, in addition to the development of longer term changes as proposed in section 5.2.5.

4.2.3 MODS WITH FURTHER POTENTIAL IMPACTS

Modifications identified with potential impacts greater than an administrative change to the Trading and Settlement Code are provided due consideration by the Modifications Committee. Generally, this will require that a vote on a given modification be deferred pending further investigation to ensure an informed decision is made by the Committee.

The Committee may choose to consider a modification in the context of a Working Group which will consider identified concerns as outlined within an agreed Terms of Reference, and/or choose to undertake a public consultation. The Modifications Committee may then reconsider the modification proposal in the context of the Working Group recommendations. It is not uncommon for the Modifications Committee to request several meetings of a Working Group to ensure all avenues have been reasonably considered prior to taking a final vote to recommend the modification for approval or rejection. Following approval/rejection by Mods Committee, the final recommendation report is sent to the RAs for a SEM Committee decision.

4.2.3.1 GENERATOR SHORT TERM TEST (MSDP_0022)

In November 2008, the TSOs submitted a Modification (Mod_65_08) which proposed the introduction of a "Short Term Test" status and associated rules to account for "within day" Generator testing. Currently, such Generator testing is facilitated by TSOs via a workaround process which is not considered an enduring solution. If this Modification is implemented, it will require significant changes to the SEM interfaces, MSP Software and Settlement System. At Meeting 25 of the Modifications Committee Meeting, this proposal was recommended for approval, following a high-level impact assessment by the CMS vendor. If the SEM Committee recommends it for approval, further work needs to be done with the vendor to finalise the implementation details.

4.2.3.2 AGGREGATED GENERATOR UNITS (MSDP_0023)

Modification Mod_05_08 introduced the concept of Aggregated Generator Units (AGUs) to the SEM. Since the approval and implementation of this Modification, an AGU contract has been developed which describes specific provisions and obligations for AGUs, in particular with respect to the "Member Generator" components of the AGU. This "Generator Aggregator System Operator Agreement" is close to being completed and enacted with the first AGU to register within the SEM (within Northern Ireland) in 2009/10.

4.2.3.3 DUAL RATED GENERATOR UNITS (MSDP_0024)

Prior to SEM Go Live, it was identified that the market design does not cater for the special case where a Generator Unit may have more than one fuel type and a substantially different capacity rating corresponding to each fuel type. As a result of this, various non-cost reflective price "spikes" were observed during the early period of market operation. In July 2008, SEMO raised a Modification (Mod_34_08) seeking to address this issue in a way that does not require major changes to the MSP Software. Since this time the Modification has been extensively considered through engagement with the consultation process, discussion at four Working Groups and has undergone a number of redrafts. The Modifications Committee has decided to recommend for approval the third version of the Dual Rated Modification. The Final Recommendation Report is now with the SEM Committee for its decision. If approved, it would be possible to implement the modification in the October 2010 release.

4.2.3.4 ADDITIONAL MARKET DATA TRANSACTIONS FROM SEMO TO TSOs (MSDP_0025)

Prior to Go Live, the TSOs raised a Modification (Mod_68_07) requiring SEMO to provide various data required to manage and report on the level of Constraint Costs within the SEM. In order to facilitate the TSOs obligations, this data was delivered to TSOs by workaround process by SEMO on a temporary basis and with certain restrictions. This Modification continues to be active, with SEMO working with the TSOs on an enduring solution which will deliver the required data in a timely and secure manner. An alternative more cost-effective implementation to that originally envisaged is currently being investigated by the TSOs.

4.2.3.5 DEFINITION OF TARIFF YEAR (MSDP_0026)

As part of the implementation of MOD_43_08, further issues relating to the availability of “approved” loss adjustment data from TSOs and DSOs have been identified. As a result, an enduring Modification has been raised (Mod_24_09) which will align the timescales for the calculation of TLAFs by TSOs with those timescales upon which DLAF calculation is based (the Tariff Year). It is expected that this will affect TSO business processes, but will also have minor impact on SEMO in terms of its publication activities with respect to TLAFs, DLAFs and CLAFs.

4.2.3.6 CALCULATION OF MODIFIED INTERCONNECTOR UNIT NOMINATIONS (MSDP_0027)

Currently, the calculation of Modified Interconnector Unit Nominations (MIUNs) is performed by the Interconnector Administrator in NI (SONI) on behalf of SEMO.

4.2.3.7 LOSS ADJUSTMENT IN CONSTRAINT AND MAKE WHOLE PAYMENT CALCULATIONS (MSDP_0028)

Modification Mod_12_09 proposes changes to the calculation of Constraint Payments and Make Whole Payments for Generator Units to include loss adjustment of their start-up and no-load costs. The Modification has been considered by a Working Group established at the request of the Modifications Committee, together with an alternative Mod_45_09 raised by ESB PGen. High-level impact assessments of the two options were obtained by SEMO from the CMS vendor. At Meeting 25 of the Modifications Committee, both proposals were voted on and Mod_45_09 was recommended for approval in preference to Mod_12_09. Final Recommendation Reports for both modifications are in the process of being drafted.

4.2.3.8 PUBLICATION OF 2 YEAR OUTAGE PLANS (MSDP_0029)

Modification Mod_25_09 proposes to change the contents of the current published Maintenance Schedule (Generator Outage Plans). The Modification would result in the Maintenance Schedule containing outage planning information covering a two year period, whereas the current requirement is for a one year time period. This Modification was recommended for approval by the Modifications Committee at its meeting in September 2009 subject to the Grid Code review panel approving this.

4.2.3.9 ERROR SUPPLIER UNIT CALCULATION (MSDP_0030)

Prior to and following Go Live, there have been various discussions on the derivation of settlement for the Error Supplier Unit in each Jurisdiction in the SEM. These discussions are ongoing, with Modifications Mod_20_07, Mod_50_08, Mod_62_08, Mod_34_09 and Mod_36_09 all relating to the interim/enduring calculations and the publication requirements for components of the current calculation.

It is likely that further discussions on this topic may be considered in conjunction with Global Aggregation (discussed in section 4.1.7), as the implementation of Global Aggregation would remove the need for any Error Supplier Units.

4.2.3.10 REMOVAL OF RESTRICTION ON ASUS TO DSUS (MSDP_0032)

Currently, clause 5.152 of the Code requires the Supplier Unit registered with a Demand Side Unit (DSUs) to always be a Trading Site Supplier Unit. Modification Proposal Mod_30_09 proposed that there should be no restriction on the Supplier Unit selection options available when registering a Demand Side Unit to an associated Trading Site. When presented to the Modifications Committee, there was general consensus that the change as proposed would not work. However, to address the issue of potential barriers to entry for smaller demand side Participants and to allow consideration of other issues relating to demand side participation, a Modification Working Group has been established.

At the Working Group, it was agreed that the current rules are sufficient for DSUs to be able to operate in SEM and that there would be issues with allowing a DSU to register with an Associated Supplier Unit. As a result, it was proposed that the rules be left as is but to continue to monitor activity in this area and to any necessary further steps if the need arises. In the case that further steps are required, they would require significant analysis and would almost certainly have impacts on the CMS (in particular with respect to the registration logic and associated calculations).

4.3 PLANNED AREAS OF INVESTIGATION

In addition to policy-led and already committed areas of work, SEMO is always working in conjunction with TSOs, Participants and the Regulatory Authorities to identify ways in which the operation of the SEM can be made more efficient. As a result, each MSDP has contained a series of planned areas of investigation, in which further assessment may identify changes that will deliver future efficiency or effectiveness gains to the services that SEMO provides, or which may benefit the SEM in achieving its objectives. These areas include:

- **Non Trading and Settlement Code changes** - that Participants have suggested as potential future improvements;
- **Market Operations** - where CMS or process changes may improve the efficiency and reduce the scope of errors in its services;
- **TSO Initiatives** - where TSOs are planning further work and which may have future SEM impacts (including those that promote system security in the SEM).

These will be considered by SEMO, in conjunction with Participants, TSOs and Regulatory Authorities, as appropriate.

MSDP ID	Raised by	Title	Description
MSDP_0061 (SEM)	Participant	PDF Formats for published invoices	This change would allow Participants to download published Invoices in PDF format.
MSDP_0062 (SEM)	Participant	Invoices Filtering	As implemented, the Participant Settlements interface allows a User to filter the Invoices using a "Most Recent Invoices" selection. This option only currently displays the Invoices relating to the Initial Invoice and does not include any associated M+4 and M+13 Invoices. This proposed change would allow the "Most Recent Invoices" selection to display all invoices for the relevant date (Initial, M+4 and M+13).
MSDP_0064 (SEM)	Participant	MSQs in Capacity PIR	The Capacity PIR report does not currently contain MSQs, which are a component of the Capacity calculations. This proposed change would ensure that MSQ values are presented on Capacity PIRs, supporting Participant shadow settlement or verification of Payments and Charges.
MSDP_0065 (SEM)	Participant	TLAF Publication in the MPI	At present, TLAF data is published in spreadsheet format on the SEMO website. This possible change would deliver TLAF data via Webservice, allowing Participants to download the data and load it into their internal systems relatively easily.

MSDP ID	Raised by	Title	Description
MSDP_0036 (SEM)	SEMO	Bid to Bank Review	<p>During the period of the MSDP 3, SEMO is planning to conduct a specific "bid to bank" review, which will identify potential changes that will increase the efficiency of market operations or reduce the scope for operator or processing errors. This review is in addition to the many and varied potential changes identified within this section, relating to specific SEMO operational experience. This separate review will cover pricing and scheduling; settlement; funds transfer/payment processing; credit risk management; and registration issues. Whilst the outcome of this review should not be pre-judged, it is likely to identify possible changes that will relate to:</p> <ul style="list-style-type: none"> ergonomics, which may increase the clarity to operators and reduce the scope for errors; processes, allowing market operations to be carried out more efficiently; rules, identifying ways in which the Code needs to change to facilitate more efficient or effective market operations.
MSDP_0038 (MOD)	SEMO	Interconnector Point of Connection	<p>The Code defines the Connection Point of all Interconnectors registered in the SEM as the opposite (i.e. non-SEM) end of the Interconnector. However, it is acknowledged that there is a gap between the key system for the Moyle Interconnector and the SEM CMS in relation to the treatment of quantities on the Interconnector. Such issues therefore need to be considered (in the context of the policy-led change on "Locational Signals"), with possible changes to be developed.</p>
MSDP_0040 (SEM)	SEMO	Registration Effective Date Update	<p>In some cases, SEMO needs to revise the Effective Date of the registration of a Participant or Unit (e.g. when information received confirms that all relevant activities for a Unit have not been completed). Currently, SEMO is not able to update the Effective Date directly; instead various discussions with the vendor and database scripts are required. This is resource intensive, therefore SEMO is considering whether CMS changes to allow operators to change the Effective Date would be appropriate.</p>
MSDP_0041 (SEM)	SEMO	Registration Additional Validations	<p>The current set of registration data validations can allow registration configurations that are not valid, causing issues and requiring many manual scripting updates. SEMO has developed possible changes to the CMS (not requiring Modifications) which will reduce the instance of such issues and increase the accuracy of data passed to the CMS databases.</p>
MSDP_0042 (SEM)	SEMO	Reconciliation and Loading of Payments	<p>At present, there is a workaround for the loading of payments, which involves a significant amount of manual matching of banking information. This possible change would automate reconciliation of bank account transactions and allocation of payments received to open sales orders.</p>

MSDP ID	Raised by	Title	Description
MSDP_0043 (SEM)	SEMO	Inter-Day Batch Dependency	This change proposes the implementation of scheduled settlement batches, removing the need for significant Market Operator monitoring and action. The proposed change would make the process more efficient (e.g. allowing batches to be run overnight and at weekends, where processing potential is currently under-utilised), along with reducing the scope for operator errors.
MSDP_0044 (SEM)	SEMO	Invoice Job – Confirmation for approval of Invoices.	Within the CMS, there is no existing requirement to confirm the selection to approve invoices. This could result in invoices being approved in error, with no confirmation of the action being required. The proposed change would introduce a confirmation step prior to the invoices being approved within the CMS.
MSDP_0045 (SEM)	SEMO	Invoice Job – Default of Self-Billing Invoice due dates.	Currently, the CMS do not allow operators to define the due date relating to Self Billing Invoices with respect to a billing run. However, this functionality already exists to define the due date for Invoice billing runs. This possible change would replicate the existing Invoice due date functionality for Self Billing Invoices, whilst maintaining flexibility to adjust the due dates as appropriate.
MSDP_0046 (SEM)	SEMO	Processing Environment Dashboard	In order to enhance the efficiency and accuracy of CMS actions within the Settlement System, SEMO is assessing the benefits of additional user-friendly controls which will restrict the processing options available only to those tasks relevant to the task group currently being performed by the user.
MSDP_0047 (SEM)	SEMO	Unnecessary File Import Type Selection.	Currently, the Settlement System contains multiple selection options for file imports. However, only one of the import options is appropriate and used by SEMO. This change would remove options that would result in incorrect processing of data, to remove the scope for manual errors occurring.
MSDP_0048 (SEM)	SEMO	Entry of Exchange Rates	At present, the CMS require Exchange Rates to be entered for both the exchange rate from £ to € and also € to £ separately. This could lead to errors where the exchange rate is entered such that the two values are inconsistent. SEMO is therefore considering a change the CMS to have a single Exchange Rate value entered, removing the risk of such errors occurring in the future.
MSDP_0049 (SEM)	SEMO	Trading Site Registration	Within the CMS, the operator Registration screens for Trading Sites is not as intuitive and user-friendly as it could be. There have already been issues with this effecting registration set up and settlement in the market. As a result, SEMO is assessing whether changes to labels and dropdown options (e.g. in defining different types of Unit) would reduce the potential for registration issues and consequential vendor support and remedial action. Whilst this is a cosmetic change, SEMO believes that this could reduce the scope for issues that are time-consuming and delay the Registration process.

MSDP ID	Raised by	Title	Description
MSDP_0055 (SEM)	SEMO	Treatment of Variable Market Operator Charge in Credit Risk Management System	This change proposes removal of a current invoicing inter-dependency between Variable Market Operator Charges and Energy Charge elements within the Credit Risk Management System. This would reduce the risks of errors occurring during processing, along with providing additional operator flexibility. A change to the Code may also be necessary..
MSDP_0053 (SEM)	SEMO	Meter Data Loading Requirements	A change is being proposed which will enable operators to submit Meter Data files on behalf of MDPs (in exceptional circumstances), with this occurrence being clearly reported within the CMS. This would support the maintenance of SEM operations in exceptional circumstances.
MSDP_0057 (SEM)	SEMO	Payment Currency Costs	The current reporting functionality supporting the calculation of payment currency costs needs to be amended, as it currently retrieves currency costs which relate to all payments received, irrespective of the run type (e.g. initial, M+4, M+13). As a result, SEMO is currently manually calculating payment currency costs. This change would remove the need for such manual processing to occur.
MSDP_0058 (SEM)	SEMO	Standing Bid Conversion for Effective Units Only	The Standing Bid Conversion process involves querying the standing bids and using them at the start and end of the Market Window for a particular Trading Day (i.e. 29 days in advance). Currently, the CMS perform this action for all Generator Units, including those not Effective on the relevant Trading Day. Whilst this does not impact market outcomes, it raises various daily error messages that could mean that unrelated errors could be missed. If resolved (i.e. only Effective Units considered), such errors would no longer occur.
MSDP_0056 (SEM)	SEMO	Unit Under Test Scheduling	The current logic relating the submission and approval of applications for Unit Under Test status is dependent on SEMO operators ensuring that multiple applications are consistent and do not overlap. This has led to instances of inconsistent data, which SEMO has been required to resolve manually. This proposed change would introduce new logic governing the receipt and approval of applications, with the CMS enforcing the required chronology and uniqueness of applications for Unit Under Test status.
MSDP_0057 (SEM)	SEMO	Meter Import Tool Update	This proposed change is an update to the Meter Data Import Tool so that is able to be used without need to access the associated proxy server. This will allow Meter Data to be loaded on behalf of Meter Data Providers (in exceptional circumstances) from any operator terminal with an appropriate Digital Certificate, avoiding the need for the involvement of SEMO IT support resources.
MSDP_0062 (SEM)	SEMO	MA Export Functionality	Currently, SEMO operators separately export data from each MSP Software screen during each run type. This change would allow batch export of a relevant set of screens, following a single export command from the SEMO Operator.

MSDP ID	Raised by	Title	Description
MSDP_0060 (SEM)	SEMO	MOI Batch Event	Sequences of SEMO operator interactions with the Market Operator Interface (MOI) are currently initiated manually and individually. This change would create additional "batch" events which would allow various activities to be initiated from single, customisable, commands (e.g. publishing of all Ex-Ante reports).
MSDP_0063 (SEM)	SEMO	SRA Cancellation in Credit Management System	Settlement Reallocation cancellations are a common activity for SEMO. However, the current Credit Management System does not provide functionality to allow SRAs to be presented in a way that supports the process of cancellation or allow automatic update of the MOI with SRAs that are cancelled. This proposed change would allow presentation of SRA's for cancellation in the Credit Management System. Allow the operator to flag SRA's as cancelled and rerun the credit report. Subsequent to this an interface back to the MOI would update the cancelled SRA's automatically.
MSDP_0066 (SEM)	SEMO	Treatment of Interconnector Units when no COD submitted	Currently, Interconnector Units may submit default Commercial Offer Data (COD) in the CMS, however the Code does not allow for this. This change would align the CMS with the provisions of the Code, by removing the ability of Interconnector Units to have Default Data within the CMS.
MSDP_0067 (SEM)	SEMO	MPI User Effective Dates in the past	SEMO users may at present only be created in the MPI with an effective date of the following day (i.e. tomorrow), with its actions restricted to data equal to or following the effective date. This has caused various issues with loading meter data files for historical periods, (e.g. M+13 and M+4). In order to avoid the need for vendor script support to address such issues, it is proposed that an additional user type is implemented for SEMO, which will allow registration of new users with effective dates in the past.
MSDP_0068 (SEM)	SEMO	Non-Standard Payment Processing	SEMO has identified various issues relating to the processing of non-standard payments within the CMS (e.g. manual payments). In particular, it is proposed that the Finance System is changed to allow payment proposals for cash collateral payments to be created automatically, as well as automatically determining the currency and market relating to a particular non-standard payment.
MSDP_0069 (SEM)	SEMO	VAT Tolerances	Within the CMS, Invoice data is transferred from the Settlement System to the Finance System. On transfer, the Finance System validates that the anticipated VAT values have been transferred (e.g. the approved blended VAT rate). However, a SEMO workaround is currently required as errors occur during this transfer, which relate entirely to data rounding inconsistencies in the host and recipient systems. This proposed change would adjust this validation to account for rounding differences.

MSDP ID	Raised by	Title	Description
MSDP_0070 (SEM)	SEMO	Eligible Availability Rounding	Within the CMS, relevant availability information is transferred between the MA and Settlement systems, to allow payments and charges to be calculated. However, there are currently issues with rounding between these systems that cause issues with downstream calculations of payments and charges. This change would remove the issues currently experienced (requiring SEMO workarounds) to ensure appropriate and consistent treatment of rounding issues.
MSDP_0071 (SEM)	SEMO	SRAs on CRM Report	The SEMO Credit Risk Management Report is intended to provide a summary of what will be published, to allow operator validation and confirmation prior to publication. However, this report does not currently contain details for Settlement Reallocation Agreements. This proposed change would include this information on the report, to ensure that prior to publication all information can be reviewed and confirmed.
MSDP_0072 (SEM)	SEMO	Participant Main User Effective Date	The CMS allow a Participant to change the Effective Date of its Main User. However, in at least one instance, this date was changed by the Participant in a way that restricted the Participant's ability to trade in the SEM. This proposed change would provide warnings and information (relating to the implications of making the proposed change) to the Participant user prior to confirmation.
MSDP_0073 (SEM)	SEMO	Inclusion of IRCU in Energy Invoicing	Currently, Energy settlement for the Interconnector Residual Capacity Unit (IRCUC) is undertaken manually by SEMO (i.e. not within the CMS). This proposed change would bring IRCUC settlement within the scope of the CMS calculations.
MSDP_0050 (SEM)	SEMO, TSOs	Unit Registration Process	During 2009, the TSOs (in consultation with SEMO) raised various Modifications (e.g. Mod_13_09) which improved and clarified the Generator Unit registration obligations and processes. However, there remain a number of areas where further changes (via Modifications to the Code) may be appropriate. As a result, SEMO and the TSOs will be discussing ways in which future improvements to registration processes may be delivered (including via Modifications).
MSDP_0037 (SEM)	TSOs	Enduring Dual Fuel	Whilst the consideration of rules for Dual Rated Generator Units may address the issues specifically considered with respect to the associated Modification, it is the intention of the TSOs to consider (in consultation with SEMO) the options for enduring treatment of Generator Units with "dual fuel" characteristics. Such options are likely to have extensive CMS implications and may only be considered for implementation in the longer term if at all.
MSDP_0039 (SEM)	TSOs	Modelling of Inter-Unit Dependency in Hydro and Thermal Plants	Various "inter-unit" physical restrictions exist for the output of hydro Generators which are not taken account of within the market scheduling process. This results in systematic inaccuracies in the Market Schedule, resulting in additional constraint costs. The TSOs are considering the merits of changes in the Code, to allow these inter-unit restrictions to be taken into account.

MSDP ID	Raised by	Title	Description
MSDP_0051 (SEM)	TSOs	Treatment of failure to Synchronise	Changes are being considered by TSOs to the Grid Code and T&SC to more appropriately interpret a "fail to sync" instruction and its effects. Within the context of the Code, this requires discussion of the impacts on the Instruction Profiling module of the MSP Software, along with associated changes to Appendix O of the Code.
MSDP_0058 (SEM)	TSOs	Partial TLAF Data Set Submission	The CMS are designed to ensure that a full set of TLAF data is submitted, every time a new Unit is registered (usually duplicating previous data submitted for most existing Units). This change (which requires a Code Modification to be approved prior to implementation) would allow partial data sets to be identified and submitted, meeting the needs of all SEM operations and reducing TSO and MO effort to deliver data for new Units.

5 SEMO IT PROJECTS

In its role as the SEM Market Operator, SEMO is responsible for the maintenance, development and support of the CMS and associated Operational Support Systems. In this context, a considerable number of IT changes will be required to further maintain, support and enhance the systems used for the running of the SEM. These changes can be categorised as follows as follows:

- **Hardware Requirements** – additional hardware requirements or upgrades to existing equipment.
- **Software Upgrades** – required upgrades to preserve or enhance CMS performance or SEMO efficiency.
- **Technical Upgrades** – technical changes required to maintain SEM CMS security and performance.
- **Telecommunications** – additional telecommunications capacity and links required to improve network resilience and performance.
- **Additional Operational Support Systems (OSS)** – new or enhanced systems required to support SEMO's services to the SEM.
- **SEMO Website** – updates to the SEMO website, as has been discussed extensively with the industry.

IT changes are essential to ensure the ongoing stability and robustness of the Central Market Systems (CMS) (e.g. hardware, telecommunications or software upgrades). These are described in the "Committed Changes" section 5.1 below and are part of SEMO's ongoing work to provide quality services to the SEM as a whole. Other changes are not as essential (described in section 5.2), and are proposed by SEMO as being of significant benefit in the future development of the SEM as a whole and to the increasing the efficiency of the services that SEMO provides. Finally, section 5.3 provides an update on developments to the SEMO website .

5.1 COMMITTED CHANGES

5.1.1 HARDWARE REQUIREMENTS

The CMS are essential to the running of the SEM, with multiple hardware components. These hardware components are based in two server rooms (Dublin & Belfast) and consist of many major components including:

- Over 120 servers.
- 4 Storage Area Networks (SAN), with a combined storage capacity of 50TB.
- 4 Tape Libraries with a combined storage capacity of 128TB.
- 40 Network Devices (Firewalls, Routers, Switches).
- 2 x 34Mbps links connecting Belfast & Dublin.
- Other devices (e.g. load balancers, spam filters, Time Servers).

In order to maintain timely and accurate market operations in compliance with the Code and its licence obligations, SEMO operates a prudent hardware replacement and upgrade process. Hardware replacement or software upgrades may be required to:

- **Prevent Equipment failure** through planned hardware replacement due to obsolescence.
- **Reduce Expensive Downtime** which occurs when older equipment fails, causing outages and market delays.
- **Reduce IT costs** as older hardware costs more due to compatibility issues and limited life support and maintenance from vendors.
- **Maintain Vendor Software Support** through CMS software upgrades which also require compatible hardware.

For example, SEMO has identified that its Storage Area Network (SAN²) needs to be expanded and upgraded to ensure that it is able to securely meet its obligations under the Code. This storage is essential as SEMO's systems need to support ongoing market operations and the Code obligations relating to online and archived storage,.

5.1.2 SOFTWARE UPGRADES

The CMS are supported by a variety of software products that play an important part in day to day operations, support and IT security. As a result, SEMO IT is continually working to ensure that IT security, data storage and reporting of the CMS is maintained and developed through the implementation of appropriate software upgrades and patches. The CMS software must be maintained so that issues with the CMS are minimised. The types of system software that SEMO need to maintain include:

- Communication Protocols
 - TCP/IP

² an architecture to efficiently attach remote computer storage devices (such as disk arrays, tape libraries) to servers.

- FTP (file transfer protocol).
- Report synchronisation.
- Data Backup
 - Enterprise backup.
 - Server imaging.
- Security
 - Antivirus
 - Anti-mailware.
- Desktop
 - Internet Explorer.
 - Microsoft Office suite.
 - Enterprise e-mail.
- End of life support.

Examples of necessary software upgrades include:

- **Axapta Upgrade** - the Axapta Finance System is a key component of the CMS which is integral to market operations (managing SEM finances and payment processing). This upgrade is required as Microsoft no longer support the current version of the software on which the Finance system is currently running.
- **Internet Explorer** - Market participants are currently using Internet Explorer version 6.0 (IE 6.0) in the current CMS architecture. IE6 is outdated and in response to requests from Participants, the CMS will be upgraded to IE7 (planned for April 2010 release).

5.1.3 TELECOMMUNICATIONS UPGRADES

The Market Operator IT sites (Belfast & Dublin) are connected via two 34 Mbps links, with appropriate redundancy included. Internal SEMO users connect to the CMS (in Belfast or Dublin) using these links, which are used for IT systems communications; database and data replication; systems monitoring; and support requirements. As a result, these links must be robust and upgraded as required to support stable and timely market operations.

As the need for database storage increases, the use of the available telecommunications links is increasing. SEMO is therefore working to upgrade the telecommunications links to ensure that:

- SEMO users can carry out day to day tasks (e.g. email, office software etc).
- Applications deliver the required performance and response.
- The performance of the CMS database does not compromise market operations.
- MPI performance does not affect Participant, TSO, IA or MDP ability to submit or retrieve market-related data.

5.2 PROPOSED CHANGES

5.2.1 ELECTRONIC FAX SOLUTION

Currently, in the event of a Limited Communications Failure, General Communications Failure, or exceptional circumstances SEMO is obliged to fax one or all Market Participants in order to maintain SEM operations as outlined in the Trading and Settlement Code. As faxing is a manual process and is prone to human error, the implementation of a SEMO electronic fax solution would ensure that:

- all data faxed to, or from, SEM Parties is recorded and viewable in electronic format;
- SEMO can send an electronic document (Word, Excel, PDF, etc) as a fax to a single or multiple recipient or distribution list. This utilises SEMO resources more efficiently during a communications failure.
- confirmation of successful transmission is more reliable (e.g. bulk faxing).

The risk of not implementing a Fax Solution could result in delayed communication with market Participants, and furthermore if a participant has an LCF there may be delays in SEMO receiving information from that participant. This could lead to disputes due to lack of firmness in the data being transferred. Finally the security risk to this data transaction is reduced by using an Electronic Fax Solution.

5.2.2 ADDITIONAL CMS PRE-PRODUCTION ENVIRONMENT

SEMO currently has several preproduction environments to perform specific tasks. These include supporting functions such as release testing (scheduled and emergency) and market studies/ modelling. SEMO IT has identified the need to implement an additional environment that will allow IT specific tests to be carried out, which will allow:

- IT performance testing.
- SEMO IT to model changes proposed to infrastructure.
- Troubleshooting of core CMS application issues, e.g. Oracle issues.

5.2.3 CHANGES TO THE TECHNICAL ARCHITECTURE

The Central Market Systems comprises a number of complex solutions delivered on multiple platforms and supported by a number of third-party products. These products typically comprise operating systems, database managements systems etc. As technology offerings by third-party suppliers are enhanced and move forward it is typical for older versions of these offerings to be de-supported by the various providers. When products such as these are de-supported this is commonly termed "End-Of-Life" (EOL). SEMO considers it prudent to constantly review the third-party products we employ and incorporate their evolution as part of our release strategy. Consequently SEMO will be upgrading the following components in the April 2010 (SEM R1.7.0) release as part of this upgrade policy. It is important to note that SEMO will inform the industry as to whether backward compatibility will be maintained but it must be recognised that this aspect is outside of our control.

Product	Applications Affected	Rationale
Sun Java	Market Infrastructure (MI), Market Application (MA)	J2SE 5.0 is in it's Java Technology EOL transition period. The EOL transition period began April 8 th , 2008 and will complete October 30 th , 2009. Our software vendors recommend SEMO to upgrade to Java 1.6.x
Internet Explorer	All application screens (i.e. MPI, MPR, MOI, MA, RCUC, Settlements)	Internet Explorer 6 on Windows XP (Professional Service Pack 2) will reach EOL on July 13 th , 2010. Our software vendors recommend SEMO to upgrade to Internet Explorer Version 7.
Forms Player	MPI	The Forms Player version deployed in the Central Market Systems is two versions behind the latest industry release. Our software vendors recommend SEMO to upgrade to version 1.6.1030.
JBOSS Application Server	MPI, MA	Our software vendors recommend SEMO to upgrade the JBOSS Application Server to 4.3.x. JBOSS will support 4.3.x until February 2013. There is a dependency on the Java version. JBOSS 4.3.x needs Java version 1.6.x (covered by Sun Java above)
Sun Web Server	MPI/MPR	Our software vendors recommend SEMO to upgrade the Sun Web Server version 6.1 to Sun Java System Web Server V7.x. There is a dependency on the Java version. JBOSS 4.3.x needs Java version 1.6.x (covered by Sun Java above)
Presentation Server for Windows	MPI, MPR, MOI, MA screens, RCUC	Our software vendors recommend SEMO to upgrade to version 4.5.1 from version 4.
Oracle Cluster Ware	MI, MA, Settlements, CRM	Our software vendors recommend SEMO to upgrade the current version to 10.2.0.4
Oracle RDBMS (RAC)	MI, MA, Settlements, CRM	Our software vendors recommend SEMO to upgrade the current version to 10.2.0.4
Oracle Client	MI, MA, Settlements, CRM	Our software vendors recommend SEMO to upgrade the current version to 10.2.0.4

Technical Upgrades in scope for the April 2010 (SEM R1.7.0) release.

5.2.4 CHANGE MANAGEMENT SYSTEM

There are a large number of change requests which need to be logged, impact assessed, priced and prioritised. A change request may arise from many areas. Typically a market change request would arise through a modification to the Trading and Settlement Code. Other types of change request may come from the following areas:

- **Market Participants** – for Non T&SC change requests, new reports or CMS changes
- **Market Operations** – to address operational inefficiencies or defects
- **Regulatory Authorities** – to drive key policy initiatives
- **SEMO IT** – system upgrades, new hardware
- **TSO** –changes that may impact SEM systems.
- **Legislation** – EU Direction, Revenue Commissioners (VAT).

Currently many different groups are maintaining multiple sets of change request data. It is important that one set of data is kept up to date and stored in a central location. The Change Management system should store:

- All change request documentation
- All communications about the change request (emails, workflows)
- All associated documentation
 - Presentations,
 - Meeting Minutes
 - Impact Assessments
- Tasks and issues associated with a change requests.
- Provide a mechanism for prioritising and costing change requests
- Facilitate better inter departmental communications
- Provide a full audit trail for the change request process

The main risks in not having the change management and compliance system include:

- Stakeholders may question the transparency or correctness of SEMO's business dealings
- Important change requests may get sidelined
- Impact assessments may be inconsistent

A Change Management system would help the SDS improve Interdepartmental communication, provide a full audit trail and increase efficiencies of time and effort as a single system could be used to track all change requests. Sharing of information enables improved decision making and the production of better quality release documentation.

5.2.5 ON-LINE REGISTRATION SYSTEM

Currently Market Participants find it difficult to Register in the SEM as the registration process and form make it challenging to get correct the first time. This in some cases can lead to an increased period of time that SEMO may have to invest with the Market Participant in the early stages of the Application Process. In some cases SEMO, the System Operators and Meter Data Providers have deemed the application complete, only to later realise that not all the information to register the unit is present.

At a recent working Group on Registration, Market Participants and the Data Providers raised a suggestion that SEMO progress an online Registration Tool. The objective is to streamline the registration process and make it easy for the Market Participants to register in the SEM. It is also envisaged that the system would not allow a Market Participant to submit an application form until all the information is included. If information is missing this would be highlighted to the Market Participant.

With the increased number of parties registering in the SEM there is a risk that a number of participants may be delayed by the Registration Process. Furthermore, additional resources will be required by Market Participants, TSOs, MDPs and SEMO to manage the pre-application stage of the Registration Process. This could be seen as a barrier to entry into the SEM. Not implementing this solution could:

- Impact on the transparency of the SEM
- Increase in the Number of disputes
- Lead to additional costs due to errors

The On-Line Registration System should:

- Reduce the workload on the Market Participants and make the registration process easier.
- Prevent incomplete applications from being accepted.
- Make the Registration Process more transparent to the Market Participants.
- Make it easier for SEMO, the SOs and MDPs to check the quality/correctness of the information provided.

5.2.6 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.

An area on SEMO's website is required which integrates to SEMO's internal query tracking tool and which would provide an on-line facility for stakeholders to submit, view and track queries raised with the Market Helpdesk. The implementation of an on-line help system would bring the following strategic benefits:

- Provide a means to allow external stakeholders to submit a new query without having to make direct contact with SEMO.
- Provide a means to allow external stakeholders to view the status of an existing query without having to make direct contact with SEMO
- Provide a means for stakeholders to view a history of queries raised for his/her organisation.
- Enable customers to monitor SEMO's performance in handling queries

- Proactively provide information around topics that are the cause of multiple similar formal queries
- Reduce the number of direct inquiries handled by the Market Helpdesk
- Enhance SEMO's profile with stakeholders with regard to query handling

5.2.7 TREASURY SYSTEM

SEMO aims to have a best practice treasury infrastructure in place. One of the objectives of this best practice is to use and access a treasury management system for recording, monitoring and reporting relevant treasury transactions. In achieving this SEMO would also wish to deliver a solution that is both cost effective and reliable.

5.2.8 CENTRAL MARKET SYSTEM MONITORING SYSTEM

The CMS are designed in an active-active configuration across two sites that operate 24 x 7, this design is complicated not only due to its dual-site nature but also because of the number of components that need to be in place to support this design. Currently monitoring is a daily manual process supported by SEMO IT staff that takes up to 2 hrs to complete and is at best minimal.

SEMO propose that a enterprise level industry standard proactive monitoring application be put in place to enhance and support the current setup. This will achieve the following:

- Support out of hours on-call.
- Enable proactive 'self-healing' on some CMS applications.
- Identify critical issues & trends before they develop and impact the CMS
- Automatic interrogation of large and complicated log across 100 + servers.
- Provide network monitoring
- Enhance security
- Achieve audit logging requirements
- Provide detailed monitoring down to software component level
- Provide detailed reporting functionality.
- Reduce time spent by support staff.

5.3 SEMO WEB SITE FUNCTIONALITY UPDATE

SEMO are in the process of implementing a new website which is planned to go live mid 2010. Here is a description of the new features that it is intended the new website will deliver:

5.3.1 GENERAL

The homepage of the new website will provide a "Market Dashboard" with visual indicators, graphs and traffic lights that show information on selected market events and values. The site will also provide a streamlined navigation system of menus and a powerful search feature will allow the website user to locate information with ease.

5.3.2 MARKET DATA - DYNAMIC REPORTING

One of the key deliverables of the new website is a new data reporting feature that allows users of the site to access historic Market Data on-line. The data will be made available to users via a set of pre-defined queries and will be presented in either a graphical or tabular format. Data produced since Market Opening (1st November, 2007) will be made available to participants.

For users who wish to interrogate the on-line data store in an automated manner, a web services solution will be implemented to retrieve data via an automated interface. The data sets in scope for the Dynamic Reporting solution are all those currently prepared each week at SEMO and published in a zipped Excel format as "Archived Energy Data" also known as "Data Publication Reports". Specifications for the new interfaces are being designed at present and will be made available on SEMO's website when they are finalised (December 2009).

Note: When the new solution is live, the existing format (weekly Excel file) will become obsolete and will no longer be made available.

5.3.3 MARKET DATA - STATIC FILES

The existing flat files containing market data that are currently published on SEMO's website and accessible via ftp will be maintained.

Note: As the I.T. Infrastructure at SEMO is changing as part of the website project the address for accessing these files will change. SEMO will provide a communication to all Market Participants as soon as possible regarding the new addresses (URLs) for accessing these files.

5.3.4 MARKET OPERATOR PERFORMANCE

A section of the new website will provide information on SEMO's performance. The Market Operator reports (Monthly, Quarterly, Annual) will be available here, along with Key Performance Indicator metrics on SEM performance.

5.3.5 MARKET MESSAGES

A message board will be implemented to allow communication about Market incidents to be tracked more easily. Each incident will stay visible on the board until it has been resolved and any updates to the incident will be shown. Visual indicators ("traffic lights") will be shown on the Market Dashboard while an incident is in progress.

5.3.6 CALENDAR

A calendar function will be integrated into the website and will allow the user of the site to see upcoming events at SEMO. The user will be able to browse the calendar to find information and publications relating to scheduled events. The type of events tracked in the new calendar will include: MOUGs, MOSTs, Modification Committee meetings, scheduled System events e.g. software releases, Consultations, etc. Additional event types can be added as required.

The Settlement Calendar, currently published as a flat file (Excel) will be available in a more user-friendly view with options to filter by event type, trading period etc as well as an option to download all information to Excel.

5.3.7 NOTIFICATIONS

The concept of allowing users to subscribe to email notifications will exist. In the first instance, it is planned to create mailing lists for the following audiences:

- Market Participants (General)
- Market Incidents
- Modifications Committee
- T&SC Interested Parties
- I.T & Systems

When new content is added to the website, SEMO will send a notification to the relevant mailing list.. SEMO will at all times approve additions to this list so that information is not communicated out of context. It will be possible for SEMO to add new mailing lists as the need arises e.g. working groups.

In addition to email updates, the new website will provide certain content feeds by RSS (Really Simple Syndication). SEMO will be able to configure RSS feeds to allow updates to be given to users of the site (without the need to provide a user id or email address) on topics such as:

- News items added or updated
- New documents published
- New Unit or Party registered
- Change in status of a Modification Proposal
- Market Message added or updated

5.3.8 MARKET DEVELOPMENT (MODIFICATIONS)

The landing page for Modifications on the website will present the latest version of the Trading and Settlement Code document, all Agreed Procedures Appendices and the Glossary. Along side this information will be shown a list of any Implemented Modification Proposals that are approved and form part of the current baseline version of the Code. This list will be dynamically updated whenever a new Modification Proposal is implemented.

Modification Committee - Publications

Improved presentation and search web pages will be introduced for managing the Modification Committee publications (Agendas, Minutes, Modification Proposal documents, FRRs, Impact Assessments, etc).

6 ADDITIONAL SEMO ACTIVITIES

6.1 SEM DESIGN SERVICE (SDS)

As part of the MSDP 2 (2008-2010) consultation process, there was strong support for the establishment of a SEM “Design Authority” function to provide a change management support process of non TSC change requests which is aligned with the development of the CMS. A clearly defined change management process will in future help to lower the risks associated with change and increase transparency and communication of future changes to SEM stakeholders.

Since the last MSDP, SEMO has been discussing various options regarding this “Design Authority” function now renamed “SEM Design Service” with both the industry and the Regulatory Authorities. In this context, SEMO has been designing the function to ensure that it will be able to provide a channel for the development of non Trading and Settlement Code change requests. In particular, the developed objectives of the “Design Service” function are:

- **Change Management** – track all change requests, report on status and release schedules.
- **Design Alignment** – maintain a SEM design baseline, to minimise risks of design divergence.
- **Baselining** - establish and manage the SEM design baseline.
- **Dependency Identification** - proactively identify and communicate dependencies to all SEM stakeholders.
- **Change Administration**- chair the SEM Change Control Board (which will require stakeholder representation) and provide Secretariat support.

SEMO is planning to conduct a separate consultation on the SEM Design Service (SDS) to which it will invite responses from all stakeholders. Following this consultation, SEMO will make proposals to the Regulatory Authorities with respect to the establishment of this new function.

6.2 PARTICIPANT TRAINING

Since Go-Live, there have been a number of new Participants joining the SEM. For each of the new Participants (all of which require some assistance), SEMO has been involved in providing support and informal training on various aspects of operating within the SEM. In particular, this training has involved explanation of SEM operations from “bid to bank” including:

- Registration requirements;
- Trading in the SEM (e.g. bids and offers, pricing etc);
- Settlement (including energy and capacity markets);
- Credit Management (including credit requirements); and
- Invoicing and payment processing.

In addition to providing introductory training to the SEM, SEMO has also been providing a practical introduction to the CMS. This has included explaining the Market Participant Interface and how data (including bids and offers, applications for Under Test status etc) should be

entered. Furthermore, SEMO maintains close contact with Participants for the first 3-4 weeks following becoming Effective in the SEM.

SEMO believes that this training and support is invaluable to new Participants, as well as minimising the scope for Participant errors which may lead to re-pricing or resettlement of the SEM. As many of the policy-led changes being progressed by the Regulatory Authorities are likely to promote additional Participant entry to the SEM (including smaller Participants), it is likely that SEMO's resource requirement to support new Participant training and support will increase in the future.

7 CONSULTATION FEEDBACK

The MSDP3 Consultation paper was published on the SEM website on December 21st 2009 informing participants that the consultation was due to run from December 21st until January 21st. During the consultation various participants requested an extension to the consultation period and the duration was duly extended until mid February. SEMO presented the MSDP3 consultation findings at the March 23rd Market Operator User Group (MOUG).

The following four participants responded to MSDP3 highlighting their concerns, preferences and issues:

- NIE Energy Supply
- NIE Energy Limited Power Procurement Business
- ESB
- Viridian Power & Energy.

The sections below are a consolidated synopsis of the general and specific comments made by these participants.

7.1 BI-ANNUAL RELEASE STRATEGY

It was generally accepted that the bi-annual release strategy is a balanced and prudent approach for managing SEMO Central Market System releases. The release strategy allows participants to have structured engagement with their vendors and helps manage the industry understanding of when approved changes are likely to be implemented. Participants commented that the scope of releases needs to be defined as early as possible so that market participants can:

- Obtain expenditure approval
- Assess the impact on a participants' in-house systems
- Project plan for:
 - Tasks and timelines
 - Resources (Human and IT)
- Identify any other potential business impacts.

Some participants mentioned that each release should incorporate sufficient testing time to enhance the quality of the release and thus reduce the number of unplanned CMS releases.

SEMO Response

SEMO IT currently delivers regular information updates to participants on forthcoming releases. This information is distributed through:

- Participant Workshops
- MPUD and Market Participant Impact documentation
- Modification Committee and MOUG presentations
- MI and MPR Data Templates and Validation Rules

- Release scope documents and
- Regular Market Help Desk emails.

SEMO releases all information to participants in as timely a fashion as possible but SEMO can sometimes be constrained by the timeliness of information from third party software vendors.

Testing

SEMO are aware of these issues and have proposed the following to the Regulators in the SEMO Revenue Submission proposal:

- The inclusion of a new Production Test Environment
- A review of Agreed Procedure 11: Market System Operation, Testing, Upgrading and Support
- A provision for IT Support Capex for additional temporary Test resources.

7.2 FORWARD WORK PROGRAMME

This section outlines the potential work items which may arise as a result of policy considerations and legislative requirements. Participants thought that this section was a very useful summary of the current issues/topics that may impact the SEM market and systems. It was felt that the Forward Work Programme should be maintained and issued to participants through the Market Operator User Group and Modifications Committee. Participants stressed that Forward Work Programme section should be used for information purposes only and should not be used as a vehicle for consultation on any market issue.

SEMO Response

SEMO agree with the above points made by participants.

7.3 MARKET OPERATIONS RELATED ISSUES

The following comments were made about Market Operations within SEMO.

7.3.1 CMS IMPROVEMENTS & PROCESSING CHECKS

One participant mentioned that the MSDP should include a list of the proposed Market Operations change requests (i.e. Non Trading & Settlement Code changes) to the Central Market Systems to eliminate the occurrence of the most common market operator errors. This participant suggested that SEMO should implement:

- Sequence controller functionality to ensure the correct sequencing and versioning of all statements and reports.
- Automated control checks to ensure that published reports are created and populated with all the required data and
- That SEMO should implement improvements to the central market systems that reduce re-processing and the number of queries.

One participant commented that measures that reduce the risk of human error providing the cost is not disproportionate were welcomed.

SEMO Response

SEMO welcome the participant support for the implementation of essential non Trading & Settlement Code change requests. With the establishment of the SEM Design Service (SDS), SEMO IT will now have:

- An open forum to discuss these essential change requests and,
- Dedicated capacity in forthcoming releases to deliver³.

SEMO are in favour of any changes that can reduce the number of queries, reprocessing and the risk of human error.

7.3.2 HELP DESK

Market Participants were seeking additional Help Desk efficiencies to:

- Reduce the time for clearing market issues / requests.
- Have greater visibility as to the progress of these issues which are recorded on the Help Desk system.

SEMO Response

SEMO are aware of these concerns and intend focusing further on the quality and response times of participant queries. To this end SEMO proposed the introduction of a new KPI (which is included in the SEMO Revenue Submission) to improve on query response times. SEMO are also proposing the implementation of On-Line Help and Registration systems. SEMO have significantly improved the Website which now provides participants with a considerable amount of information on:

- The Registration process
- Market Reports
- Training information and
- A sizeable FAQ section.

SEMO are always very concerned about delivering on participant's expectations and welcome any feedback or suggestions participants might have.

7.3.3 AD HOC RESETTLEMENTS

Participants were in favour of measures that would help reduce the number of ad-hoc resettlements. It should be noted that SEMO are directly responsible for to be completed

SEMO Response

SEMO understand that the numbers of ad hoc resettlements in the market are excessive. SEMO are responsible for a number of these ad-hoc resettlements and therefore SEMO are proposing the introduction of a new KPI to focus on reducing the numbers of SEMO related ad hoc resettlements.

³ SEMO understand that Modifications will always take precedence over Non Trading and Settlement change requests unless a compelling case can be made otherwise.

7.4 FUEL MIX DISCLOSURE

One participant commented that it would be prudent if SEMO were to include implementation of the enduring solution on fuel mix disclosure in the MSDP. SEMO outlined a temporary Fuel Mix solution in [Section 4.1.8](#) of this document.

SEMO Response

SEMO are in favour of implementing any Fuel Mix Disclosure proposal that the Regulatory Authorities endorse and that participants are willing to support.

7.5 SEMO IT PROJECTS

There was general support for the IT projects proposed in Section 5 of the Market Systems Development Plan. Participants in particular outlined their support for:

- **Central Market Systems Monitoring System** – This system can provide proactive Central Market System monitoring for the identification of critical IT issues that could impact the CMS.
- **On-Line Help System** – This system would provide additional market information to participants and would also allow participants track their queries
- **Electronic Fax Solution** - for General or Limited Communications Failures

SEMO Response

SEMO welcomes the support for these essential capital projects. The CMS Monitoring System will help increase the efficiencies of IT staff and will also deliver faster fault resolution times thus providing better support to participants. The On Line Help system should help the quality and speed of resolution of participant's queries. The Electronic Fax solution is an Audit recommendation to provide backup for any potential communications failure. Business cases for these 3 capital projects have been submitted to the Regulatory Authorities as part of the proposed capital funding requirement for the forthcoming SEMO price control (2010-13).

7.6 MSDP FORUM

One participant requested that SEMO hold an industry forum following its review of consultation responses with the following objectives:

- To identify where consensus exists.
- To share information on additional non-T&SC driven changes requested by market participants;
- To share assessments of the timeframe and costs to deliver on proposed changes and
- To seek agreement on the scope of the Central Market System changes.

It was suggested that this Forum would be a good way of driving consensus on the content on the content of the work programme and aid the process of MSDP finalisation between SEMO and the Regulatory Authorities.

SEMO Response

There are many forums through which participants can express their concerns (Modifications meetings, MOUG's, Participant Workshops, Working Groups the Change Control Forum (SDS) and the Help Desk). SEMO would therefore contend that these established forums are sufficiently mature to handle all the concerns raised by this participant.

7.7 MSDP TIMELINES

One participant made the point that it would be highly beneficial to market participants if the MSDP consultation cycle were to commence sufficiently early each year such that the consequential work activity planning can be completed by the start of November. This would facilitate the early identification of costs and resource requirements. The participant further commented that any delay in the finalisation of scope and design restricts a participant's capacity for implementing changes.

SEMO Response

The MSDP is not intended to be a design document but rather a snapshot in time of the issues facing the SEM marketplace. SEMO also contend that the Market release scope and design is now handled by SEMO IT through the various Central Market Systems release workshops, MOUGs and MPUD documentation.

7.8 SEM DESIGN SERVICE (FROM MSDP)

Participants supported the development of a SEM Design Service (SDS) to manage non Trading and Settlement code changes and requested that the SDS be established as soon as possible. Participants suggested that the SDS should:

- Contain Regulatory Authority representation
- Should have industry participation and governance
- Not interfere with the authority of Modifications Committee
- Co-ordinate future market releases
- Maintain, circulate and update the technical IT baseline documents and
- Provide update reports to the Modifications Committee.

SEMO Response

This issue is now being progressed through the SDS consultation paper.

7.9 OTHER

The following subsections outline other issues raised by participants.

7.9.1 TRAINING

Participants considered it useful if training provided to new participants was made available to existing participants who may require training for new members of staff or refresher courses.

SEMO Response

SEMO are in discussions with the Regulatory Authorities about the possibility of providing regular training to participants. Training, however, is resource intensive and would require additional human and IT resources which SEMO currently do not have.

7.9.2 WEBSITE

In general the proposed improvements to the SEMO website were welcomed. One participant requested that the “General Public” report would continue to be published. Another participant welcomed the concept of allowing users subscribe to specific email notifications. One participant was concerned about maintaining the consistency of the website access methods.

7.9.3 THE PURPOSE OF THE MSDP IS UNCLEAR

Participants thought that the MSDP document was an important source of information but the intended purpose of the document was unclear.

SEMO Response

SEMO are currently reviewing the current structure and purpose of the MSDP with the Regulatory Authorities.

8 APPENDICES

Introduction to the Appendices:

- Appendix A – Completed Changes (pre October 2009 release) and Closed Issues.
- Appendix B - Work or Assessment Committed.
- Appendix C - Planned Areas of Investigation.

Items in these Appendices are assigned one of the following categories, indicating their nature and source, as a result of:

- Approved Modifications (MOD); or
- Change Requests raised by SEMO, External Data Providers or Participants, to increase the effectiveness of SEMO, or to minimise risks to SEM operation (SEM).

8.1 APPENDIX A – COMPLETED CHANGES (PRE OCTOBER 2009 RELEASE)

MSDP 2008 ID / Mod ID	Title	Description
LG001 (MOD)	Ex-Post Loss Of Load Probability Forecast	TSO systems changes, TSO-SEMO interface for Ex Post LOLP and public report delivered as part of Day 1+ Project.
LG002 (MOD)	Publication of the Required Credit Cover Report	SEMO CMS changes to deliver the new report were incorporated as part of Day 1+ Project.
LG008 (SEM)	Screen Based Query of Registration Data	MPI changes were implemented as part of the Day 1+ Project, which allow registration-related data to be queried by status by Participants.
LG010 (MOD)	SEMO Branding	Various branding changes made to MPI screens, invoices etc to reflect the SEMO branding and legal identification of documents.
LG011 (MOD)	Maximum Value for Settlement Reallocation Agreements	In accordance with Modification Mod_14_08, a change was made to the CMS to allow Settlement Reallocation submission by Participants of value up to 1bn (€ or £), from the previous cap of 1m (€ or £).
LG012 (MOD)	Unique Identification of Data Transactions	The enduring Code requires all Data Transactions to be assigned and associated with a Unique Identifier. As part of the Day 1+ Project, changes were made to ensure that data supplied by TSOs and IAs are correctly assigned an Identifier (this was not included in the original CMS design).
LG013 (SEM)	Validation of Data for Operational Scheduling	As part of the Day 1+ Project, interface changes were made to allow data required for Operational Scheduling to be validated on submission. These validations permit rejection of transactions if the data sets are incomplete or if the submitted values are outside configurable, pre-defined ranges.
LG015 (MOD)	Validation of MI to Settlements Interface	Various changes to the interface between the CMS Market Interface (MI) system and the Settlements system were implemented as part of the Day 1+ Project. The changes provide enhanced confidence in data set accuracy by validating the availability, completeness and validity of data sets prior to performing settlement runs.
LG016 (MOD)	Validation of SO/IA Data Transactions	As part of the Day 1+ Project, interface changes were made to allow data submitted by Participants or other Parties to be validated on submission. These validations permit rejection of transactions if the data sets are incomplete or if the submitted values are outside configurable, pre-defined ranges.

MSDP 2008 ID / Mod ID	Title	Description
LG017 (MOD)	Inclusion of VAT Number on Settlement Invoices	As part of the Day 1+ Project, changes to the CMS were made to allow the presentation of the relevant VAT number on all Settlement Invoices.
Mod_86_07 (MOD)	Publication of Shadow Prices	In response to an approved Modification (Mod_08_09), additional reports were implemented, which make Shadow Prices calculated as part of the calculation of the Market Schedule and SMPs available to interested parties. These are General Public reports and are published to the SEMO website and the MPI.
Mod_38_08 (MOD)	Data Verification Period	In consultation with SEMO, the TSOs raised a Modification (Mod_38_08) which re-defined the time at which the Data Verification Period commences. This enables queries to be raised earlier in some cases (e.g. weekends) and was developed to avoid systems changes. The Modification was approved by the Regulatory Authorities and implemented in January 2009.
Mod_43_08 (MOD)	Application of Distribution Loss Adjustment Factors (DLAFs)	Following the identification of compliance issues with the application of loss adjustment factors, the TSOs (in consultation with SEMO and the RAs) developed Modification proposals (Mod_35_08) and TSO/DSO systems changes to allow the required loss adjustment to occur. Following implementation of some TSO and DSO changes, this has resulted in additional manual publication activities which are now performed by SEMO.
Internal Change (SEM)	Change to the exchange rate used for Capacity Settlement Reallocation Agreements	Within settlements, all calculations for the capacity market are made using the Annual Capacity Exchange Rate. This change was introduced to ensure that the Annual Capacity Exchange Rate is applied in all calculations for the Capacity Market.
Internal Change (SEM)	Manual input of the Future Risk Period Start Date	This change allows the Market Operator to define and manually enter the Future Risk Period Start Date into the Credit System as part of the CMS (where the Future Risk Period is the period for which settlement amounts have not been calculated, but could be incurred by a Participant).
Internal Change (SEM)	Transfer of SRAs between MI-STL-CRM	When the CMS were designed, sufficiently flexible transfer and availability of Settlement Reallocation Agreement data from the Market Participant Interface system via the Settlement System to the Credit Risk Management system was not available. This change enabled a daily scheduled transfer of such information to be implemented.
Internal Change (SEM)	Change Adjustment Amount in RCC calculation	The change moved the Adjustment Amount from the Code Participant calculation for Required Credit Cover (RCC) to the Generator and Supplier account calculations. Whilst this change does not affect the results of the calculations, it does allow the Market Operator to apply and view the Adjustment Amount as required, before the aggregation and netting at a Code Participant level occurs.

MSDP 2008 ID / Mod ID	Title	Description
Mod_62_08 (MOD)	Modification to the timing of the JESU processing and publication related events	This change implements the provisions of approved Modification Mod_62_08, revising the timing of publication of values relating to the Jurisdictional Error Supplier Unit (JESU).
Internal Change (SEM)	Transfer of SRAs between MI-STL-CRM – ‘On Demand’	This change allows the required Settlement Reallocation data to be transferred to the CMS Credit Risk Management (CRM) System “on demand”. This ensures that the most up to date information is always available to credit processing activities.
Internal Change (SEM)	VAT for Future Risk Period Start Date	This change clarifies the calculation of the VAT applicable within the Actual Exposure for the settlement days within the Settled Not Invoiced period. In particular, the new functionality ensures that when the Future Risk Period Start Date has been manually entered into the system, the VAT value imported from Settlement for the Settled Not Invoiced period is ignored. Instead, a calculation of the VAT based on the Settlement Statement amounts and the Future VAT % is performed.
Internal Change (SEM)	Credit Risk Report Republishing	This change ensures that a Credit Risk Report may only be republished where the report is regenerated prior to publication.
Mod_72_07 (MOD)	Correction of Required Credit Cover Requirement	This change implements the provisions of approved Modification Mod_72_07, such that a Participant receives the full economic benefit of its Generator Unit output being offset against its Supplier Unit liability, where it has both Generation and Supplier Units.
Internal Change (SEM)	Application of VAT rate on invoices for revised Settlement	In order to ensure the correct application of the relevant VAT rate, this change revised the calculation of adjusted amounts on revised invoices, such that the current VAT rate is applied to the difference between the previous and new settlement amounts (i.e. amounts where VAT has not yet been applied) to determine the Adjusted amount to appear on the revised invoice.
Internal Change (SEM)	ASU trading site limit change from 20 to 100	When the SEM CMS were implemented, the Market Participant Interface system included a restriction to 20 of the number of Trading Sites for which an Associated Supplier Unit may be registered as the Supplier. In order to facilitate additional Trading Sites, this change increased the number of allowed Trading Sites to 100.

8.2 APPENDIX B - WORK OR ASSESSMENT COMMITTED

MSDP 2009 Reference	Title	Business Benefits	4 Indicative CMS Cost (High/Medium/Low ⁵)
MSDP_0001 (MOD_54_08)	Individual Warning Limit above the Default Warning Limit	Participants can tailor the circumstances in which Warning Notice are issued.	L
MSDP_0002 (SEM)	Sort Code Validation against Customer Information	Validation will be against the correct information, as required.	L
MSDP_0003 (SEM)	Transfer of additional results from MA to MI Database	Additional data from MSP Software will be available for future reporting.	M
MSDP_0004 (MOD_49_08)	Aggregate Payments for Invoices	Lower payment processing costs, along with more convenient payment options for Participants.	L
MSDP_0005 (SEM)	Nested Dispatch Instructions	All possible combinations of affected wind instructions will be able to be processed, reducing manual intervention in data preparation and processing.	L
MSDP_0006 (SEM)	Invoices sent to correct side of ledger	Errors will be easier to identify, as the process will include more robust validations.	L
MSDP_0007 (SEM)	Reopening the Gate without Standing Bid Conversion	SEMO will be able to facilitate Gate re-opening on a timely basis to support SEM operations.	L
MSDP_0008 (MOD_88_07)	Publication of Actual Load Summary	Code compliance by Market Operator.	L
MSDP_0009 (MOD_47_08)	Validation of Registration and Technical Offer Data	More transparent and flexible process for Participants, allowing all modes of operation to be reflected in Technical Offer Data.	H
MSDP_0010 (SEM)	Data Transfer Service	SEMO website will deliver data to support SEM operations and meet Market Participant needs.	Unknown
MSDP_0011 (SEM)	Day 1 Specification does not match the publication requirement in the Code for Load Forecast Report	SEMO will be Code compliant with the Code.	L

⁴ Note: This is an estimate by SEMO, reflecting SEMO's current view of the possible Prime Contractor costs only.

⁵ Low (€0 - €100k), Medium (€100k - €500k), High (€500k+).

MSDP 2009 Reference	Title	Business Benefits	4 Indicative CMS Cost (High/Medium/Low⁵)
MSDP_0022 (MOD_65_08)	Generator Short Term Test	Transparency of how “within day testing” is applied, with implementation fully aligned with the provisions of the Grid Code.	Unknown
MSDP_0023 (MOD_05_08)	Aggregated Generator Units	AGUs can be fully integrated into the arrangements within SEM, enhancing Generator competition.	Unknown
MSDP_0024 (MOD_34_08)	Dual Rated Generator Units	Price “spikes” only due to modelling within CMS will be removed, providing cost-reflective prices to customers and enhancing confidence in the SEM.	M
MSDP_0025 (MOD_68_07)	Additional Market Data Transactions from SEMO to TSOs	SEMO data security issues will be resolved and TSOs will receive all data (on demand) required to perform Constraints analysis and reporting functions.	Unknown
MSDP_0026 (MOD_24_09)	Definition of Tariff Year	Submission of TLAFs and DLAFs will be aligned, coupled with the calculation of CLAFs.	L
MSDP_0027 (MOD)	Calculation of Modified Interconnector Unit Nominations (MIUNs)	Systems amended or developed to meet the needs of new Interconnectors to meet the provisions of the Code.	Unknown
MSDP_0028 (MOD_12_09)	Loss Adjustment in Constraint and Make Whole Payment Calculations	Current treatment of losses is not correct, therefore a change to accurately account for losses will mean that they will be correctly assigned in terms of scheduling and settlement.	Unknown
MSDP_0029 (MOD_25_09)	Publication of 2 Year Outage Plans	New Modification – to be assessed.	L
MSDP_0030 (MOD_36_09)	Error Supplier Unit calculation	Decision on the enduring calculation will be implemented.	Unknown
MSDP_0032 (MOD_30_09)	Removal of restriction on ASUs to DSUs (Mod_30_09)	New Modification – to be assessed.	Unknown
MSDP_0033 (SEM)	SEM Registration Pack	Each Registration will be validated as complete prior to submission, allowing more efficient processing of applications.	Unknown
MSDP_0034 (SEM)	MIP vs LR Analysis	Full transparent process regarding the application of MIP or LR by the Market Operator.	N/A
MSDP_0035 (SEM)	Eligible Availability for Energy Limited Generator Units	Performance of the interim calculations can be monitored, following SEMO analysis.	N/A

8.3 APPENDIX C - PLANNED AREAS OF INVESTIGATION

MSDP 2009 Reference	Title	Business Benefits	6 Indicative CMS Cost (High/Medium/Low)⁷
MSDP_0036 (SEM)	Bid to Bank Review	The proposed changes will advance the efficiency and effectiveness of SEM operations, reducing delays and errors.	Depends on changes specified
MSDP_0037 (SEM)	Enduring Dual Fuel Modelling	Generator Units with dual fuel characteristics will be correctly modelled, leading to more cost-reflective market outcomes.	H
MSDP_0038 (SEM)	Interconnector Point of Connection	Treatment of losses will be correct and there will be clarity on the treatment for all new Interconnectors planned.	Unknown
MSDP_0039 (SEM)	Modelling of Inter-Unit Dependency in Hydro and Thermal Plants	Hydro Units will be correctly scheduled in the market, minimising Constraint Costs and providing correct signals within day (e.g. Interconnector Units).	Unknown
MSDP_0040 (SEM)	Registration Effective Date Update	SEMO operators will be able to update Effective Date, ensuring that Unit accession to the market is always aligned with CMS.	L
MSDP_0041 (SEM)	Registration Additional Validations	SEMO operators will be supported by appropriate tools to facilitate accurate and Code-compliant Unit configurations.	M
MSDP_0042 (SEM)	Reconciliation and Loading of Payments	Automated consistency validation in the CMS of banking and sales order information.	M
MSDP_0043 (SEM)	Inter-day Batch dependency	Efficient batch running of processes at times where system requirements for other activities is reduced.	M
MSDP_0044 (SEM)	Invoice Job – Confirmation for approval of Invoices.	Invoice approval will be confirmed prior to implementation, ensuring correct operator actions with respect to invoice confirmation.	L
MSDP_0045 (SEM)	Invoice Job – Default of Self-Billing Invoice due dates.	Proven functionality for Invoices will be replicated for Self Billing Invoices, removing the need for manual configuration of due dates and minimising potential errors.	L
MSDP_0046 (SEM)	Processing Environment Dashboard	Scope for incorrect sequencing of actions will be reduced, leading to reduced risk of incorrect settlement outcomes.	M

⁶ Note: This is an estimate by SEMO, reflecting SEMO's current view of the possible Prime Contractor costs only.

⁷ Low (€0 - €100k), Medium (€100k - €500k), High (€500k+).

MSDP 2009 Reference	Title	Business Benefits	6 Indicative CMS Cost (High/Medium/Low)⁷
MSDP_0047 (SEM)	Unnecessary File Import Type Selection.	File import options consistent with SEM data processing will always be selected, with no risk of incorrect market outcomes.	L
MSDP_0048 (SEM)	Entry of Exchange Rates	Scope for incorrect Trading Day Exchange Rate entry and application will be reduced.	L
MSDP_0049 (SEM)	Trading Site Registration	Trading Site configuration labels and options will be intuitive, allowing the operator to minimise the scope for incorrect Trading Site registration.	L
MSDP_0050 (SEM)	Unit Registration Process	Process will be efficient, clear and promote new entry to the SEM.	Depends on changes specified
MSDP_0051 (SEM)	Treatment of failure to Synchronise	Correct assignment of payments to Generators relating to startups.	Unknown
MSDP_0052 (SEM)	Treatment of Variable Market Operator Charge in Credit Risk Management System	Reduction in the number of VMOC invoices issued to the market from 12 per month to 3. Providing a more efficient operation of the market.	Unknown
MSDP_0053 (SEM)	Meter Data Loading Requirements	Any requirement for SEMO operators to load data will be efficient and support meeting of all relevant market timelines.	L
MSDP_0054 (SEM)	Payment Currency Costs	CMS will be used to calculate correct currency costs for all run types.	L
MSDP_0055 (SEM)	Standing Bid Conversion for Effective Units Only	Errors raised will be relevant and meaningful (rather than known), allowing real issues to be addressed.	L
MSDP_0056 (SEM)	Unit Under Test Scheduling	Correct logic for Unit Under Test applications will be enforced, so that there are no instances of incorrect multiple applications.	L
MSDP_0057 (SEM)	Meter Import Tool Update	SEMO operators will be able to load data as required, with the CMS recording the MO actions for auditing purposes.	M
MSDP_0058 (SEM)	Partial TLAF Data Set Submission	When a new Unit is registered, only required data will be submitted by TSOs to SEMO, eliminating duplication and minimising performance implications.	M
MSDP_0059 (SEM)	MA Export Functionality	Less errors resulting from manual MA screen exports where screens are not complete.	L
MSDP_0060 (SEM)	MOI Batch Event	Sequences of events will be initiated by an Operators, with each event being validated as completed by the CMS before the next can start, reducing scope for processing errors.	L

MSDP 2009 Reference	Title	Business Benefits	6 Indicative CMS Cost (High/Medium/Low)⁷
MSDP_0061 (SEM)	PDF Formats for published invoices	PDF formats of Invoices will be available for Participants to download.	L
MSDP_0062 (SEM)	Invoices Filtering	Initial, M+4 and M+13 Invoices will be viewable in a single location, allowing effective comparison by Participants via the Settlements interface.	L
MSDP_0063 (SEM)	SRA Cancellation in Credit Management System	SRAs will be presented to SEMO operators in a way that supports the correct treatment of Code provisions with respect to cancellation.	Unknown
MSDP_0064 (SEM)	MSQs in Capacity PIR	All information will be available in a convenient form to allow Participants to validate Capacity payments and charges.	Unknown
MSDP_0065 (SEM)	TLAF Publication in the MPI	TLAF data is stored and published from a single source, eliminating the possibility of inconsistent data sets being published and used for settlement processing.	Unknown
MSDP_0066 (SEM)	Treatment of Interconnector Units when no COD submitted	SEMO fully compliant in all cases with the Code with respect to Default Data for Interconnector Units.	L
MSDP_0067 (SEM)	MPI Users Effective Date in the past	SEMO operators are not restricted in terms of data loading by arbitrary user restrictions within the CMS.	Unknown
MSDP_0068 (SEM)	Non-Standard Payment Processing	SEMO operators will be supported in making non-standard payments in an efficient manner.	Unknown
MSDP_0069 (SEM)	VAT Tolerances	No transfer errors will occur, allowing processing to continue without manual workarounds.	Unknown
MSDP_0070 (SEM)	Eligible Availability Rounding	Inter-system transfer and resolution of rounding issues will be seamless, removing the need for manual workarounds.	Unknown
MSDP_0071 (SEM)	SRAs on CRM Report	Full review of items to be published will be shown on the CRM report, reducing publishing errors.	Unknown
MSDP_0072 (SEM)	Participant Main User Effective Date	Participants will understand the implications of changing the Effective Date for the Main User, reducing scope for unanticipated restrictions on data submission or CMS access.	Unknown
MSDP_0073 (SEM)	Inclusion of IRCU in Energy Invoicing	IRCU settlement will be part of normal Energy Invoicing activities, reducing scope for issues and errors.	Unknown