SEM Committee Annual Report 2009

SEM-10-027

11th May 2010

CONTENTS

1 FOREWORD BY THE SEM COMMITTEE

The Single Electricity Market (SEM) was one of the first of its kind in the European Union and is a flagship development in the European drive and vision for regional electricity markets. Its objectives are to deliver consumer benefits by creating a competitive, efficient, reliable wholesale electricity trading arrangement on the island. We, the SEM Committee, believe the SEM promotes the interests of consumers by enabling greater competition through cost reflective prices, while also securing a diverse, viable and environmentally sustainable long term energy supply.

The SEM Committee is encouraged with the success of the market in its second year of operation. A key objective of the SEM was to attract new and efficient generators to the island of Ireland. Because prices have been set transparently, the SEM creates a sound basis for new entry and investment, and the SEM Committee were delighted to see two, major utility companies buy into the all-island market (Scottish & Southern, and Endesa) in the past few years.

Significant progress has been made on the East-West interconnector[1] and this is consistent with European policy towards the development of regional and more integrated electricity markets. These developments put us at the frontier of EU best practice in energy regulation. The entry of new, more efficient generating units should ultimately decrease prices in the wholesale market. Additionally, the SEM Committee is encouraged that the market is continually attracting significant interest in the development of new generation plants.

At the end of the second year of the market, there were 50 participants registered in the SEM, 18 of which joined since market commencement. The total number of registered participants had a registered market capacity of 9,899MW. The Single Electricity Market Operator (SEMO) processes energy payments of approximately €3 billion annually, with a further €640m being paid in capacity payments in 2009 and €551m in 2010.

Both Governments and Regulatory Authorities (RAs) are fully committed to the all island energy market which will, through sustained co-operation, meet the challenges for the island as a whole. We remain focused to protect the interests of consumers, to enhance security of supply and promote the development of a fair, efficient and competitive market on the island.

The SEM Committee will continue to oversee the development of the market over the coming years. We will balance the need for the market to change and evolve over time, with the provision of a high degree of regulatory certainty to the market. We are of the view that the longer term strategic development of the SEM should be based on the SEM objectives and the key external drivers impacting on the market, including increased intermittent generation, increased interconnection and moves toward regional integration of electricity markets across Europe.

The SEM Committee recognises that 2009 has been a very difficult economic environment both on customers and indeed on the energy sector. We are undoubtedly facing very challenging global economic conditions, in the short term at least, but we remain focused on the SEM objectives and remain committed to working with industry participants and consumer representatives to ensure that we face the challenges ahead in 2010 with innovation and leadership.

[1] http://www.interconnector.ie/

2 OBJECTIVES AND OUTLINE OF THIS REPORT

2.1 OBJECTIVE

The objective of this report is to document the main developments in the SEM in 2009 and to discuss some of the key issues facing the market in its third year.

2.2 OUTLINE OF THE REPORT

The contents of the each section of the report are as follows:

- **Section 3** - sets out the legal role of the SEM Committee and introduces the Members of the Committee.
- **Section 4** - provides an overview of the trends in the market in terms of price and demand to date.
- **Section 5** - details the directed and non-directed contracts since the start of the SEM.
- **Section 6** - discusses the role of the Market Monitoring Unit in the market and the key tasks undertaken by this team.
- **Section 7** - describes the objectives of the Capacity Payments Mechanism and describes the CPM Medium Term Review.
- **Section 8** - reviews the key modifications made to the Trading and Settlement Code in the 2009.
- **Section 9 -** describes the key activities undertaken to regulate and incentivise SEMO in the market.
- **Section 10** - reviews areas related to the SEM where work has been undertaken by the RAs on an all-island basis.
- **Section 11** - details areas for future development for the SEM Committee and the RAs.

3 ROLES AND RESPONSIBILITIES OF THE SEM COMMITTEE

3.1 LEGAL ROLE OF THE SEM COMMITTEE

The SEM Committee is the decision-making body which governs the exercise of regulatory functions on SEM matters. Legislation was enacted in Ireland and Northern Ireland to establish and to give effect to the SEM Committee.

In Ireland, the relevant legislation is the Electricity Regulation (Amendment) (Single Electricity Market) Act 2007 which amends the Electricity Regulation Act 1999 to provide for the establishment and operation of a single competitive wholesale electricity market on the island of Ireland. Similar legislation providing a legal framework for the establishment and operation of the SEM in Northern Ireland is referred to as the Electricity (Single Wholesale Market) (Northern Ireland) Order 2007.

Under law, the primary function of the SEM Committee is the making of decisions as to the exercise of relevant functions of the Commission for Energy Regulation (CER) or Northern Ireland Authority for Utility Regulation (The Utility Regulator) in relation to SEM matters on behalf of the Regulatory Authorities (RAs). A matter is a SEM matter if the SEM Committee determines that the exercise of a relevant function of the CER or the Utility Regulator in relation to that matter materially affects, or is likely to materially affect, the SEM.

The objectives of the SEM Committee in carrying out their functions in relation to the SEM are set out in Section 9 of the Electricity Regulation (Amendment) (Single Electricity Market) Act 2007 and Section 9 of the Electricity (Single Wholesale Market) (Northern Ireland) Order 2007. Section 9 includes the duty to promote efficiency and economy, to promote competition and to secure a diverse, viable and environmentally sustainable long-term energy supply.

3.2 MEMBERSHIP OF THE SEM COMMITTEE

The Minister for Communications, Energy and Natural Resources and the Minister of Enterprise, Trade and Industry appoint the members of the SEM Committee. In 2009 the SEM Committee members were:

- Three representatives of the Commission for Energy Regulation (CER) – Tom Reeves, Michael G. Tutty and Dermot Nolan;
- Three representatives of the Northern Ireland Authority for Utility Regulation (The Utility Regulator) - Iain Osborne, CEO, Alan Rainey, Board member and Dermot MacCann, Director; and,
- One Independent Member, Ignacio Perez Arriaga and one Deputy Independent Member, José Sierra López.

The legislative framework provides that there shall be equality of voting between the RAs. The SEM Committee, therefore, consists of three voting blocks; one vote for the independent voting block (representing the Independent or Deputy Independent Member, as the case may be), one vote for the CER voting block (representing the three CER SEM Committee Members) and one vote for the Utility Regulator voting block (representing the three Utility Regulator SEM Committee Members).

3.3 GOVERNANCE STRUCTURE

Figure 1 shows a schematic of the high-level joint regulatory governance arrangements, put in place by the RAs to support the SEM Committee.

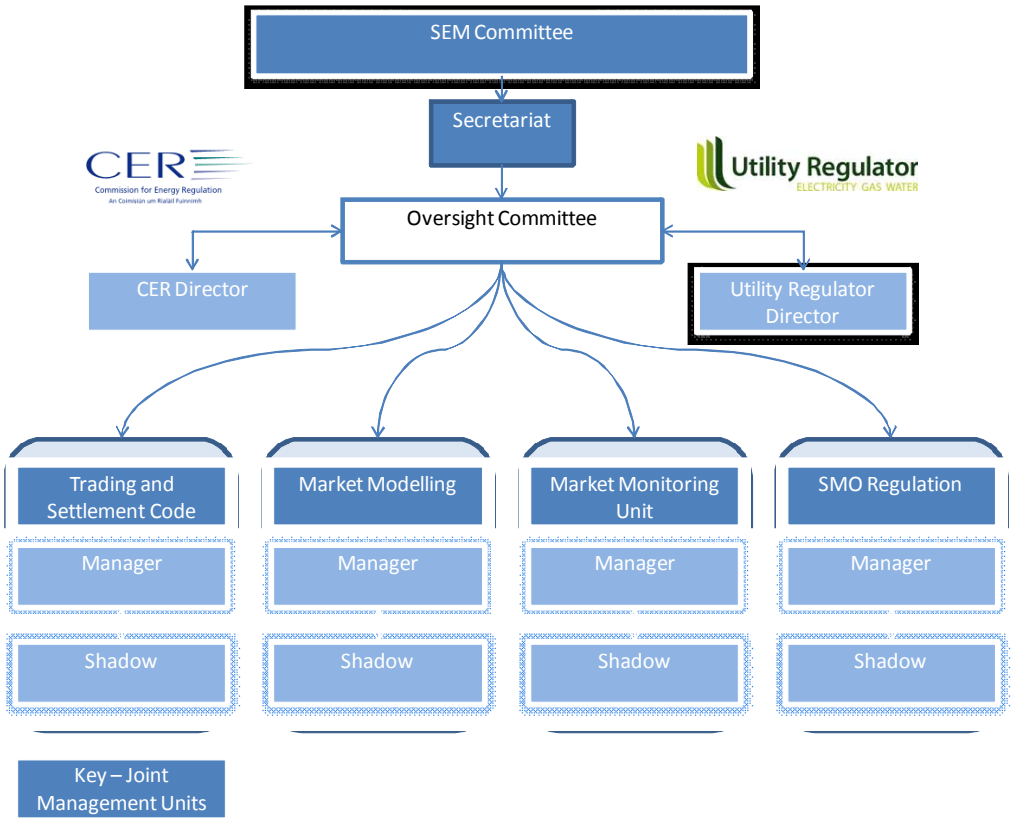

Figure 1: Schematic of the High-level Joint Regulatory Governance Arrangements

The SEM Committee is supported by an Oversight Committee, a Secretariat and a number of Joint Management Units (JMUs) which supervise and coordinate key regulatory workstreams.

As part of the SEM Committee's governance arrangements, the Oversight Committee was given delegated authority to carry out certain operational functions on behalf of the SEM Committee. The Oversight Committee currently meets on a biweekly basis through either videoconferencing facilities or at face-to-face meetings and deals with, among other matters:

- Implementation of SEM Committee policy;
- Management of all SEM Committee operational matters;
- Management of the JMUs and other SEM work;
- Reviewing policy matters to be decided by the SEM Committee; and,
- Developing SEM work plans and budgets for the SEM Committee.

The Oversight Committee is a subcommittee of the SEM Committee. It consists of senior staff members from both RA offices. The members of the Oversight Committee in 2009 were Paul O'Neill (Programme Officer Manager, SEM), Dermot MacCann (Director of Electricity, Utility Regulator), Eugene Coughlan, Paul McGowan and Cathy Mannion (Directors, CER).

The RAs have identified four areas as key SEM regulatory functions for which a designated Manager, overseeing a JMU, is assigned. Each manager, in respect of his or her particular JMU, reports to the Oversight Committee. This manager has responsibility for the planning, management and delivery of outputs of the JMU, co-ordinated with the relevant point of contact within the counterpart RA (shadow manager). To this end, agreed internal joint working principles, called Joint Regulatory Arrangements, have been developed by the RAs for the operation of the oversight arrangements, the exercise of roles in the management of the JMU, and the exercise of any delegated functions from the SEM Committee. There is a biweekly video conferencing meeting between the managers and shadow managers of the JMUs. The following are the four JMUs:

3.3.1 TRADING AND SETTLEMENT CODE

The Wholesale Electricity Markets team, based in the CER, manages the SEM Trading and Settlement Code (the Code) which sets out the rules and procedures concerning the sale and purchase of wholesale electricity in Ireland and Northern Ireland. The SEM rules, and the market development of these rules, are managed by this team on behalf of the SEM Committee.

3.3.2 MARKET MONITORING UNIT

The Market Monitoring Unit (MMU), which is based in the Utility Regulator, reviews the behaviour in the market on an ex-post basis; this includes investigating the exercise of market power, monitoring the compliance of market participants with the bidding code of practice and other market rules and reviewing prices reported in the market. In addition, this unit oversees the processes of the Capacity Payments Mechanism.

3.3.3 MARKET MODELLING GROUP

The Market Modelling Group (MMG), which is based in the CER, is responsible for developing and/or monitoring various Contracts for Differences for participants in the SEM. Specifically the MMG sets the price, quantity and supplier eligibility of Directed Contracts, which is a key part of the SEM Committee's market power mitigation strategy, while it also takes an active role in encouraging the development of the Non-Directed Contracts market. In addition the MMG provides market forecasts of the SEM to the RAs the majority of which is short-term (one to two years) forecasting. This information is used to feed into work being carried out by the JMUs and other divisions within the RAs. Medium and long-term forecasting is also carried out to support the RAs policy decisions.

3.3.4 SINGLE ELECTRICITY MARKET OPERATOR REGULATION

This unit, which is based in the Utility Regulator, oversees the regulation of the Single Electricity Market Operator (SEMO). SEMO, which administers the market functions of the SEM, is managed as a contractual joint venture between EirGrid and SONI and is licensed by the RAs. This unit is responsible for approving SEMO's revenue and tariffs, overseeing SEMO's license compliance and approving projects undertaken by SEMO.

The SEM Committee is therefore assisted in carrying out its decision-making responsibilities through work carried out by the Oversight Committee and the four JMUs. This structure has worked effectively since the start of the SEM.

4 OVERVIEW OF THE SINGLE ELECTRICITY MARKET

4.1 OVERVIEW

The SEM high-level design was agreed in June 2005 and following this the RAs developed and implemented a suite of arrangements necessary for the SEM to commence on 1 November 2007. Legislation was enacted in both jurisdictions to underpin the SEM – the Electricity Regulation (Amendment) (Single Electricity Market) Act 2007 in Ireland and the Electricity (Single Wholesale Market) (Northern Ireland) Order 2007 in Northern Ireland. The SEM Committee was established on the same day, as the all-island decision making body for all SEM matters.

The SEM is a pool-based mechanism for the sale and purchase of wholesale electricity across the island of Ireland. Entities that generate electricity for sale (generators) sell their electricity through the pool, and entities that sell electricity direct to the final consumer (suppliers) buy their electricity from the pool, at the prevailing pool price for any given half-hour trading period.

The pool price in a trading period is determined based on the commercial bids made by generators to sell their electricity and by the demand for electricity in that trading period. Financial settlement of the trades in the pool takes place in accordance with the rules set out in the Trading and Settlement Code for the SEM.

All generators were issued with a revised licence before the beginning of the SEM which includes a condition that generators must adhere to the "Bidding Code of Practice" (BCOP)[2]. This document sets out what generators should include in their bids into the market, i.e. - generators must bid their short-run marginal costs (SRMC).

As part of the market power mitigation strategy to prevent market power being abused or distorting the SEM, the MMU continually monitor participants' bidding behavior to ensure that the generators adhere to a Bidding Code of Practice and their licence conditions at all times.

[2] Bidding Code of Practice - Response and Decision Paper

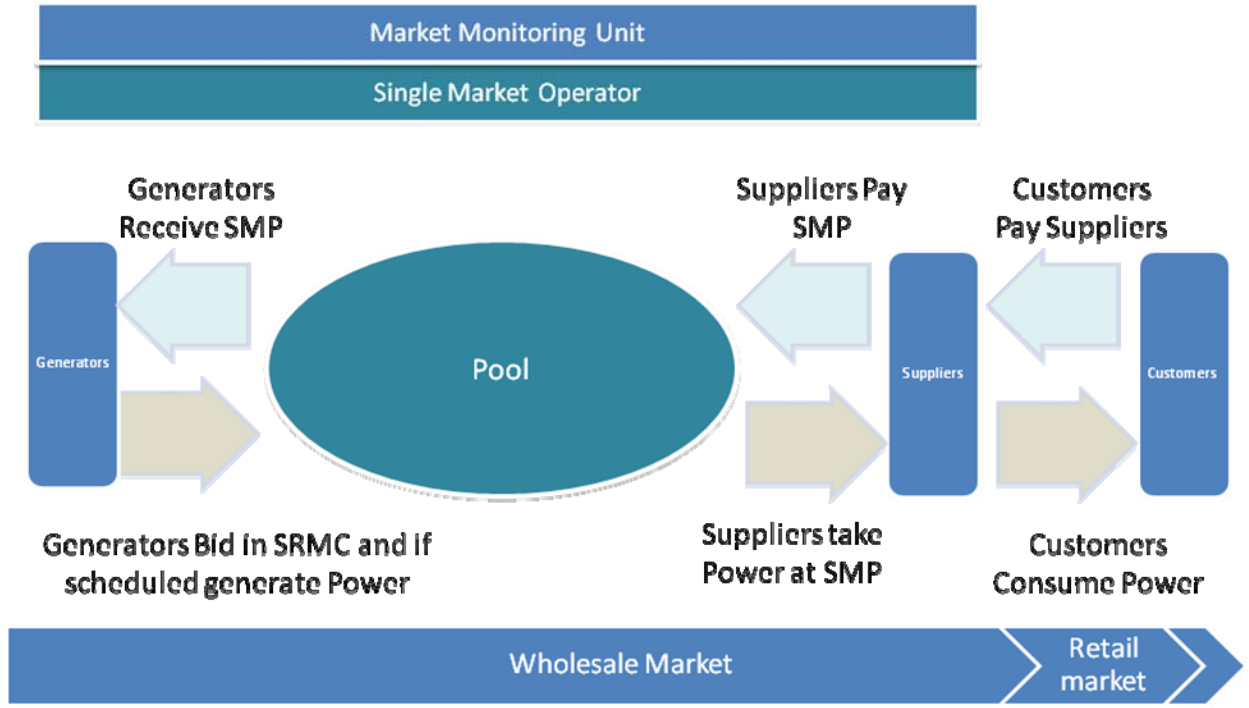

Figure 2: Diagram of how the SEM works

4.2 PRICES AND DEMAND – TRENDS TO DATE

The following observations derive from SEM Monitoring to date.

4.2.1 LOAD DURATION CURVE

Figure 3 illustrates the load duration curve for the last two years of the market. A load duration curve illustrates the percentage of time that load or system demand, measured in megawatts, is above a certain level. For example, from reading the graph below, in the first full year of the market (2008), demand was above 5,000MW approximately 20% of the time. In 2009 Demand was above 5,000MW 11.5% of the time.

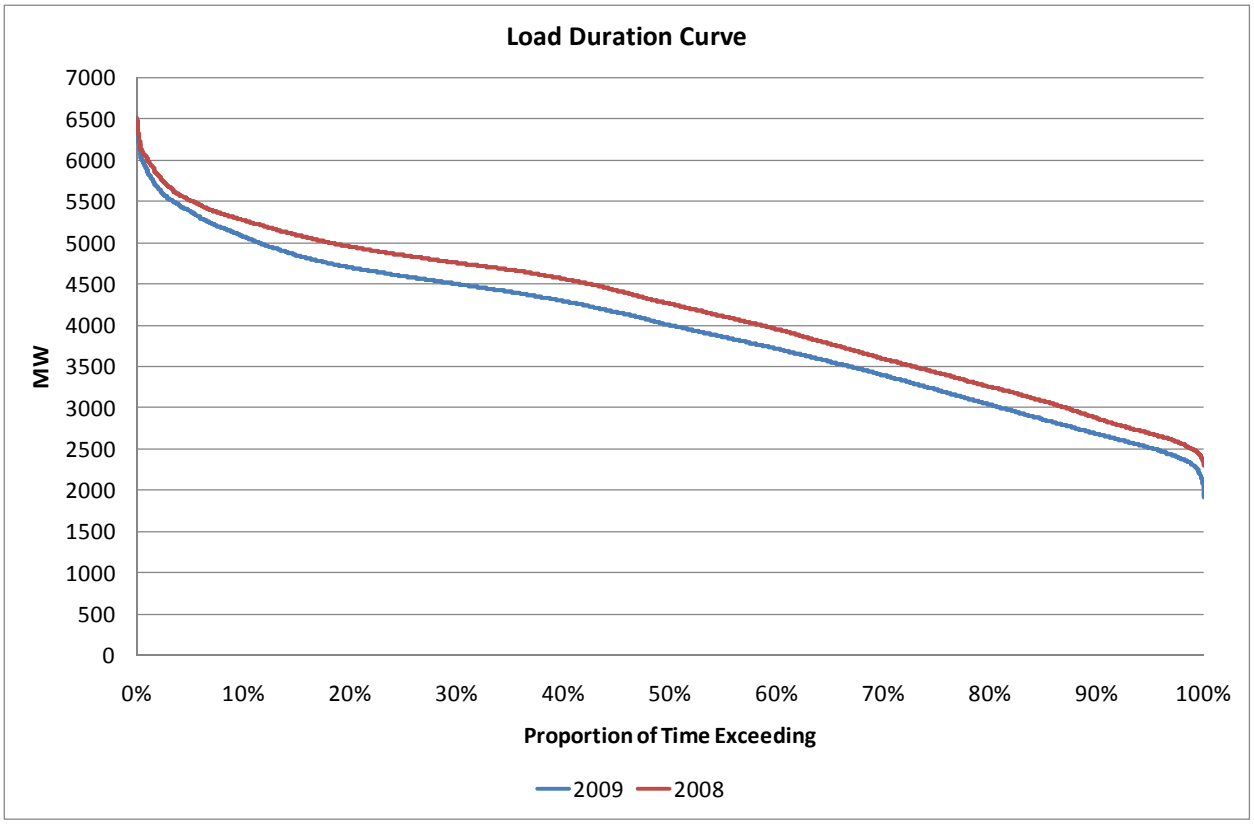

Figure 3: Load Duration Curve for the Years 2008 and 2009 of the SEM

This curve is similar to that experienced pre-SEM, with a small number of peak periods (which tend to occur over the winter period) occurring in the year.

4.2.2 SMP, SHADOW PRICE AND UPLIFT

The following price components are in the market:

- SMP - the price at which each MWh of electricity is sold under the Trading and Settlement Code in any given Trading Period. The SMP is made up of the sum of the shadow price and uplift;
- Shadow Price – a component of the SMP for each Trading Period calculated by the Market Schedule and Pricing software; and,
- Uplift – a component of the SMP for each Trading Period which is calculated to reflect excess Start-Up and No Load Cost elements of Schedule Production Cost for relevant Generator Units.

Figure 4 shows the average daily profiles for 2009. It shows:

- The Load profile over the day in MW (black line, measured on the right-hand axis);

- The Shadow Price (blue area, measured on the left hand axis);
- Uplift (red area). The top of the red area shows the SMP at that time.

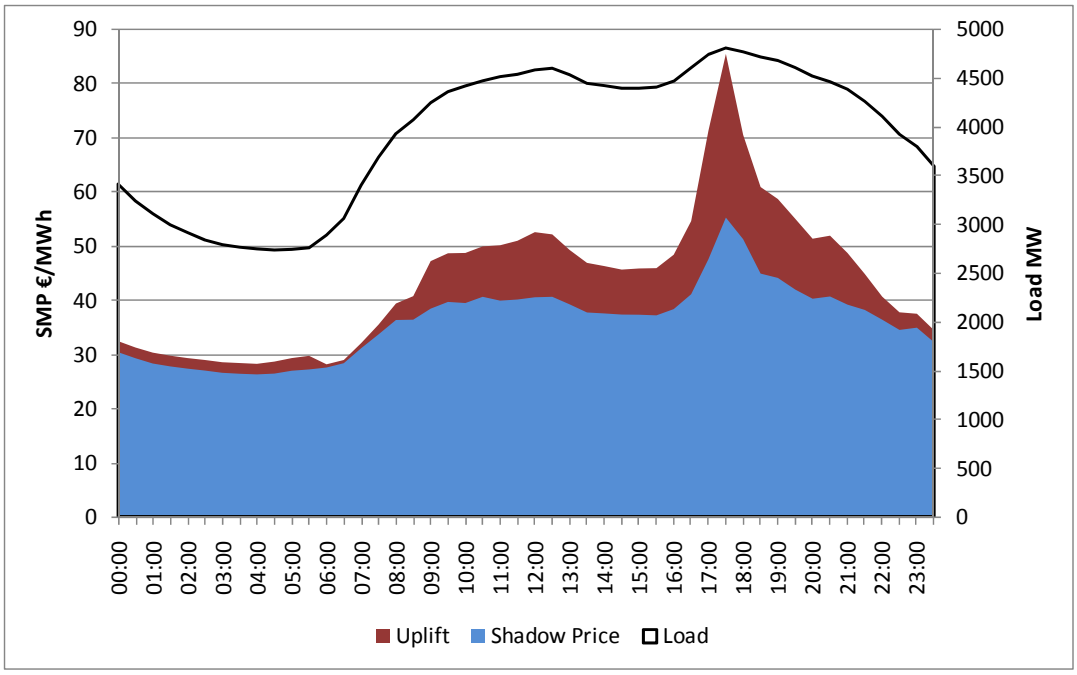

Figure 4: Load Duration Curve for the Year 2009 of the SEM

It should be noted that both the Load and the average SMP have reduced in 2009 (reflecting both a fall in demand and lower international fuel prices), as illustrated in the graph below;

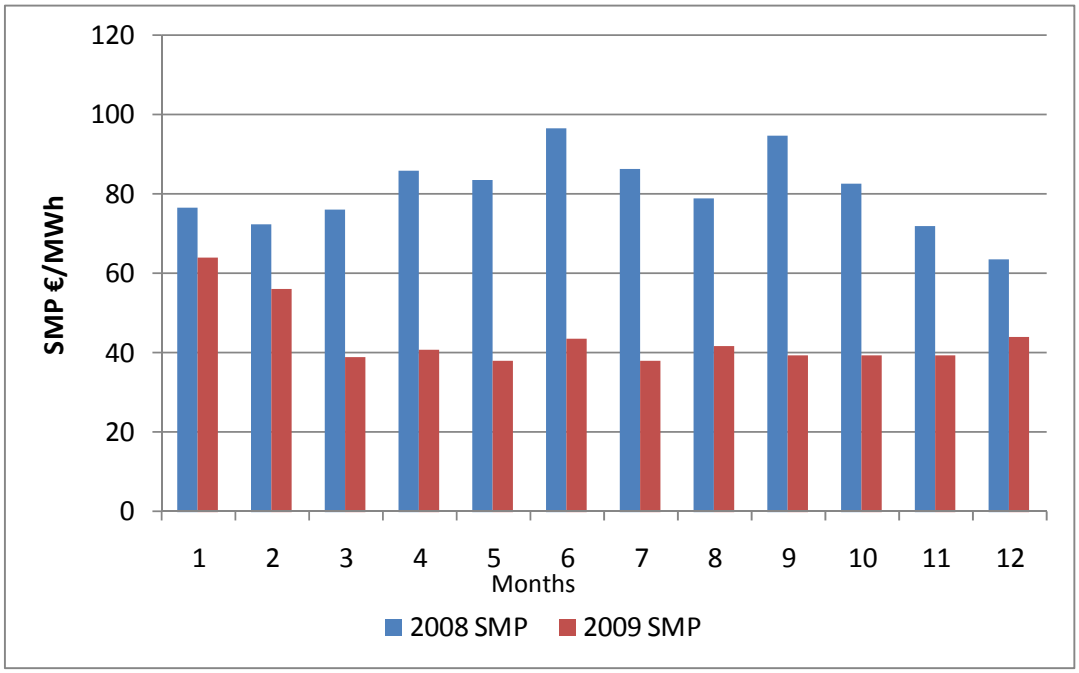

Figure5: SMP Price History in the SEM

Since October 2008 the SMP has fallen from over €80/MWh to under €40/MWh for most of 2009. The Demand Weighted Average SMP has fallen about 45% over the last two years.

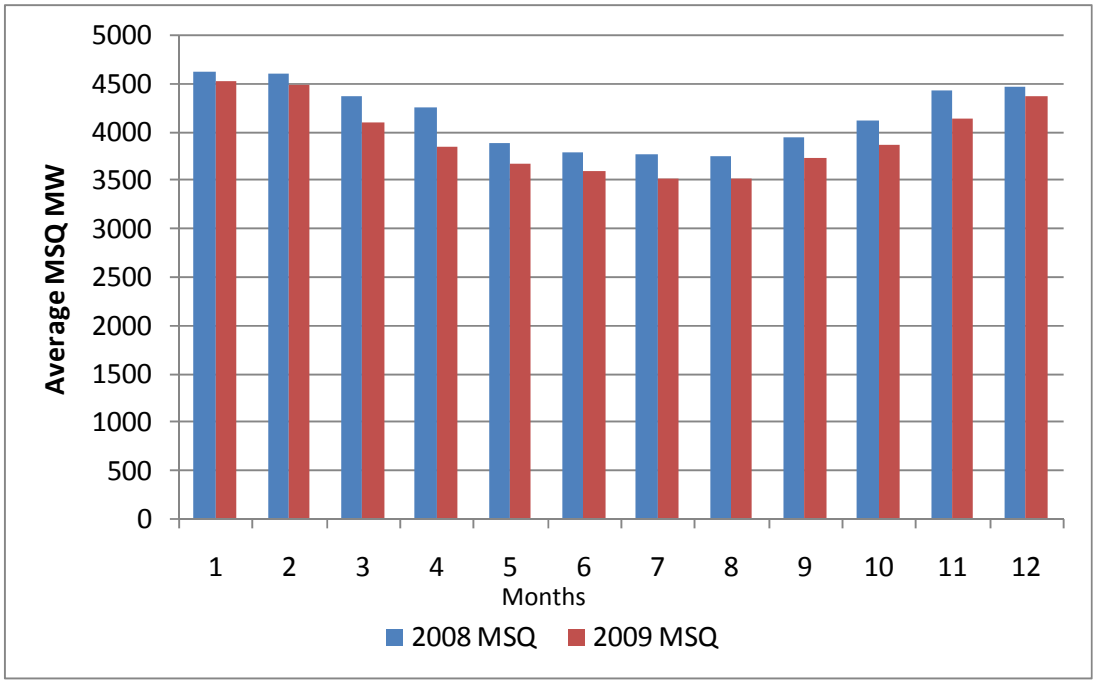

Figure 6: System Demand

The average MSQ has also fallen in 2009. It fell about 5% to just below an average of 4,000MW.

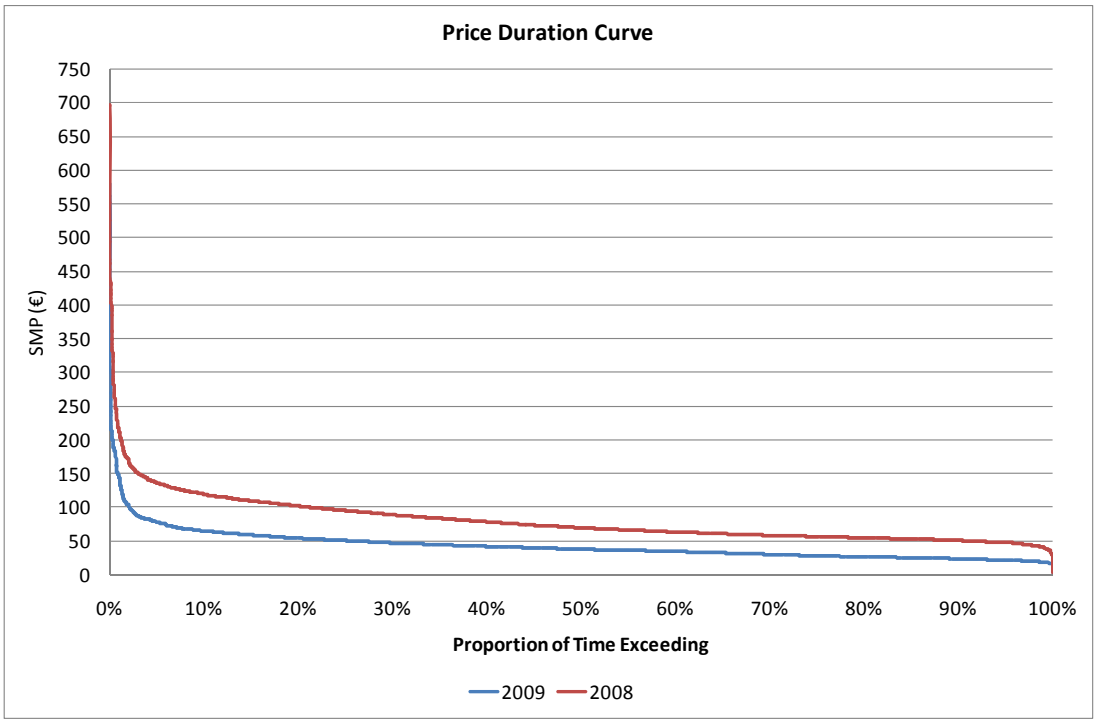

Figure 7: Price Duration Curve for the Years 2008 and 2009 of the SEM

The graph illustrates the propensity for price spikes in the SMP. The graph shows a sharp descent at first that stabilises into a smooth descent from around the 4% mark in 2008 and the 1% mark in 2009. In 2008 21% of half-hourly price outcomes fall above €100/MWh with only about 10% of half-hours yielding values below €50/MWh while in 2009 just over 2% of half-hourly price outcomes fall above €100/MWh and about 26% fell below €50/MWh

The following table shows the top ten incidences of SMP in 2009 and the split between the shadow price and uplift at that time.

Date	Period	SMP €/MWh	Shadow €/MWh	Uplift € MWh
25/08/2009	09:00:00	580.53	50.87	529.66
09/09/2009	17:00:00	561.60	37.17	524.43
22/12/2009	17:00:00	419.06	71.87	347.19
30/10/2009	17:30:00	392.18	55.51	336.67
03/12/2009	17:30:00	387.20	58.27	328.93
23/12/2009	17:30:00	360.14	69.25	290.89
09/11/2009	17:30:00	350.43	350.43	0.00
30/11/2009	10:30:00	349.31	349.30	0.01
07/12/2009	17:30:00	344.66	344.13	0.53
23/11/2009	17:30:00	344.22	344.22	0.00

Table 1: The top ten incidences of SMP in 2009

A majority of the top ten incidences of SMP in the 2009 occurred in November and December when the system margin (the level of available capacity above demand) was relatively tight. The majority of the top ten peaks were caused by the Kilroot and Ballylumford peakers (power plants that generally run only when there is a high peak demand) being scheduled at the margin during peak periods for electricity.

The first few years of the SEM saw significant volatility in the SMP as a result of the major fluctuations in the international fuel markets, similar volatility was witnessed in 2009. Gas fired units contribute the largest share of the generating load and therefore the variations in the gas price had a significant impact on the SMP. During 2009 the gas share has increased from the start of the year when the wholesale gas price started dropping, leading to the established gas units displacing other generation types fuels (most notably coal) from the merit order.

Typically, electricity prices are higher over the winter months when electricity demand is high and fuel is usually more expensive. However, the fall in international fuel prices in 2009, has pushed the cost of generation down and has resulted in lower wholesale prices going into the 2009/2010 winter compared to the first year of the SEM.

The long term trend of SMP has largely followed trends in fuel prices and has increased in periods where the margin between demand and available capacity has been tight.

At the start of 2010 the price of the fuel types are beginning to realign and the market will carry through any price changes from these fuel markets into the wholesale electricity price.

The figure below shows the average daily SMP from 1 November 2007 to 31 December 2009.

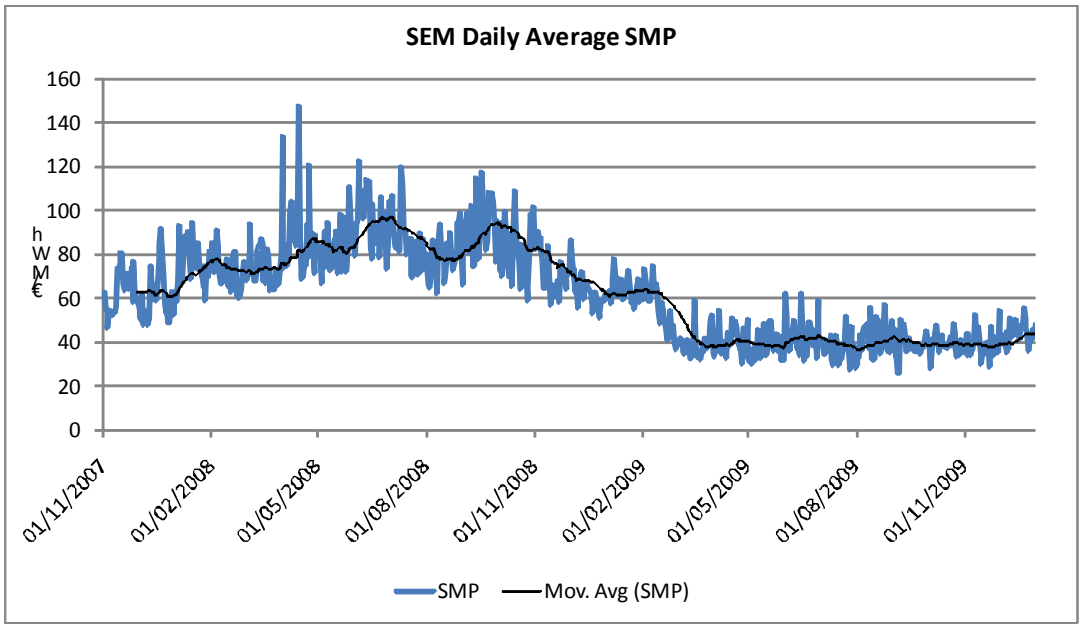

Figure 8: Average SMP since the start of the SEM

5 SEM DIRECTED CONTRACTS

5.1 SEM DIRECTED CONTRACTS

As part of the SEM Market Power Mitigation Strategy, the RAs Market Modelling Group implements a suite of Directed Contracts (DCs) on behalf of the SEM Committee. Market Power is defined as the ability of a market participant, acting independently, to raise (or reduce) market prices consistently and profitably above (or below) competitive levels for a sustained period of time. Directed Contracts are designed to significantly reduce the incentive on the incumbent generators to submit bids in the SEM above competitive levels or withhold capacity in order to influence SEM spot prices or future contract prices.

There were three elements to the RAs work on the implementation of DCs for the tariff year Q4 2009 to Q3 2010:

- The quantification of the DCs required to mitigate market power in the SEM;
- The pricing of the DCs; and,
- The eligibility of suppliers in the SEM to subscribe to the DCs.

5.1.1 QUANTITIES OF DIRECTED CONTRACTS

The quantities of DCs imposed on the incumbent generators are set to achieve a desired concentration level in the SEM as measured by the Herfindahl-Hirschman Index (HHI)[3]. A HHI threshold of 1,150 was chosen by the RAs and, at this HHI level, only ESB Power Generation (ESB PG) were required to sell DCs for the 2009/10 tariff year which runs from October to September (in the second year of the market, both ESB PG and NIE PPB were required to offer DCs). Three DC products were required to be offered by the RAs – baseload, mid-merit and peak – in order to reduce ESB PG's market concentration in each segment for each quarter to a HHI of 1,150.

The quantities of DCs which ESBPG were required by the RAs to offer to eligible suppliers to meet this HHI threshold are shown in Table 2 across:

The contracts were sold to eligible suppliers in two separate subscription processes by ESB PG. These consisted of a Primary Subscription Window and a Supplemental Subscription Window in which any unsold contracts were offered to those suppliers who had bought their full share in the Primary Subscription Window.

Table 2: ESBPG Quantities (MW)

ESBPG Quantities (MW)			
Quarter	**Baseload**	**Mid-Merit**	**Peak**
Q4 2009	233	226	200
Q1 2010	258	174	172
Q2 2010	240	334	n/a
Q3 2010	263	98	n/a

[3] Definition of HHI

Figure 9 below shows the volume of Directed Contracts that ESB PG and NIE PPB were required to offer from the beginning of the SEM. The chart shows an increase in the total volume of contracts in the second year, which was maintained in the third year.

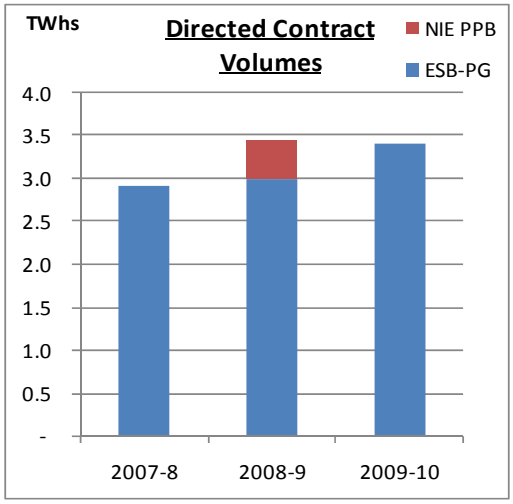

Figure 9: Volume of Directed Contracts

5.1.2 PRICING OF DIRECTED CONTRACTS

The prices of the Directed Contracts were determined each day during the subscription period using forward fuel and carbon prices and regression formulas determined by the RAs through econometric analysis. These formulas were designed to mimic the results of the validated SEM PLEXOS model.

Using this methodology, the average prices for each DC product are shown in Euros and Sterling below in Table 3:

Product	€/MWh	£/MWh
Baseload	57.03	48.35
Mid-Merit	65.10	55.20
Peak	89.69	76.05

Table 3: Average prices for each DC product in Euros and Sterling.

As shown in Figure 10, the average price of Directed Contracts for the 2009/10 tariff year was significantly lower than the previous year, and indeed also lower than the 2007/08 period, in line with the movements in international fuel markets.

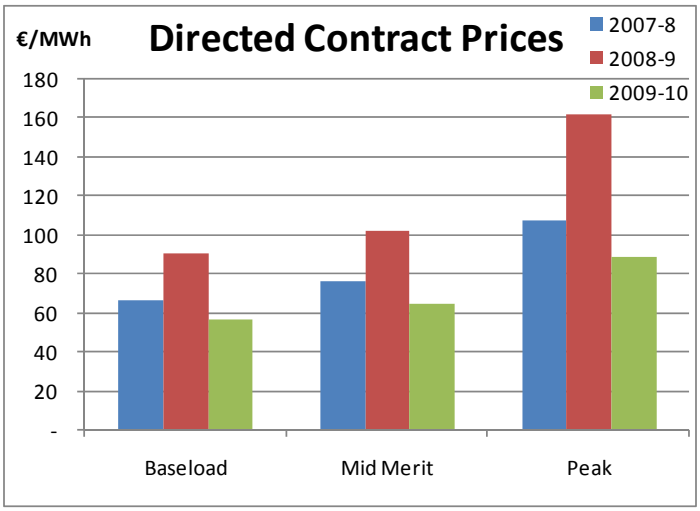

Figure 10: Directed Contracts Prices.

5.1.3 SUPPLIER ELIGIBILITY

Using supplier Maximum Import Capacity (MIC) data and historical energy and load shape for each customer type, the RAs calculated the MW eligibility for each supplier for each of the DCs being offered by ESB PG. Supplier eligibility was communicated by the RAs to each supplier and to the DC seller.

In 2010, the RAs will again complete the annual process of the implementation of DCs described above, covering the 2010/11 tariff year. This process has already begun with the publication of an RA consultation paper on the implementation of DCs for the 2010/11 tariff year.

5.2 SEM NON-DIRECTED CONTRACTS

While the RAs legal remit on behalf of the SEM Committee largely extends to DCs, licensed generators can also offer Non-Directed Contracts (NDCs) to the market. The RAs do not set the price or quantity of NDCs as they are agreed on a bilateral basis between market participants. They do however take an active role in the monitoring and development of the NDC market by assessing the reasonableness of prices during the ESB PG and NIE PPB auction processes and publishing the auction results[4]. The RAs have also worked with participants on the development of a multi-lateral trading facility which went live in April 2009.

The key regulatory objective is to encourage the development of a robust, transparent and cost-effective means for the trading of risk management products in the market to the ultimate benefit of consumers. In this regard, an information note on Contracts for Differences was published in February 2009, which provided an overview of the contracting process for 2009.

[4] Results from 2009 NDC and PSO auctions

In the first three years of the market, significant quantities of NDCs were offered for sale by ESB PG and NIE PPB - in fact a greater quantity of NDCs have been offered than DCs, to the benefit of liquidity in the SEM and market participants, as shown in Figure 11 below.

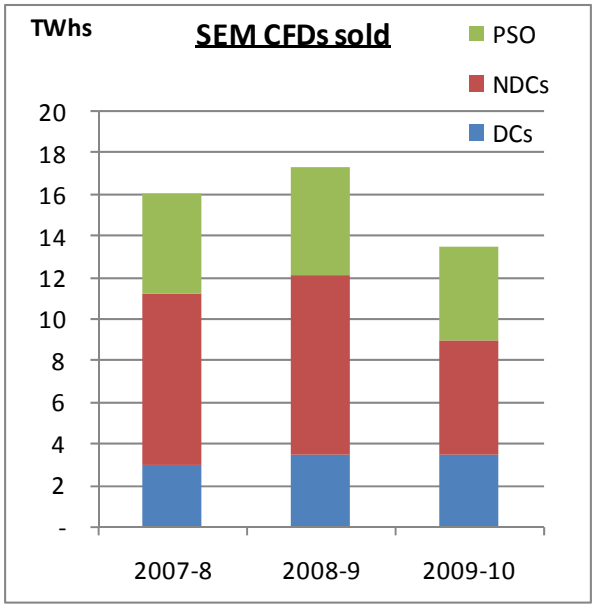

Figure 11: SEM CFD's sold from 2007-2010

In addition to the above contracts, ESBPG also offered generation backed by the Public Service Obligation (PSO) in the first three years of the market. The RAs determine the reserve prices that these products are offered to the market at. The figures below show the volume of contracts offered by ESB PG and NIE PPB in each process over the past 3 years.

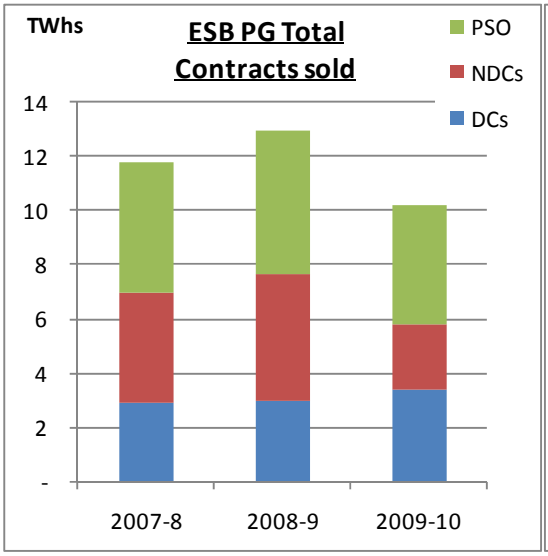

Figure 12: Volume of contracts offered by ESB PG

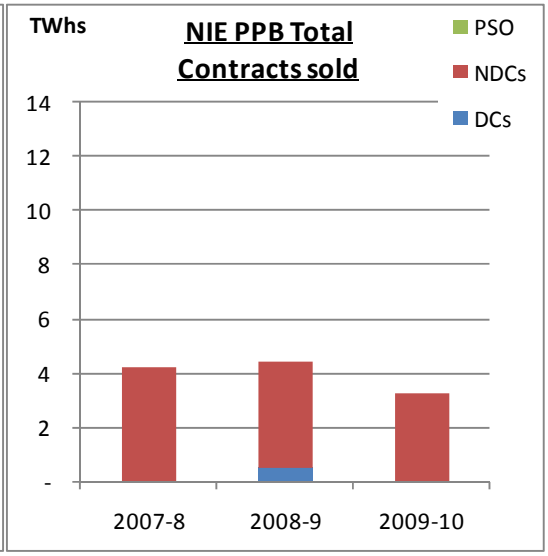

Figure 13: Volume of contracts offered by NIE PPB

6 THE MARKET MONITORING UNIT

6.1 ROLE OF THE MARKET MONITORING UNIT

The RAs Market Monitoring Unit's (MMU) role on behalf of the SEM Committee is defined as:

- Active monitoring of the SEM;
- Conducting investigations into the exercise of market power including but not limited to the violations of bidding principles or other market rules;
- Acting as the point of contact within the RAs for well documented complaints that upon investigation appear to have a sound basis; and,
- Making recommendations, as necessary, to modifications to the Trading and Settlement Code which the RAs wish to initiate.

Further information can be found in reports published by the MMU such as the MMU Annual Public Report published in April 2009 (SEM/09/039)[5]. The report constitutes the MMU's public assessment of the performance of the SEM for the period 1 November 2007 to 31 December 2008. This exactly covers the two Trading Years 2007 and 2008.

The Annual report looked at:

- Bidding principles;
- Generator Bidding and availability;
- Generator Schedules and dispatch;
- Demand, Capacity Margin and Market Prices;
- Flows, Interconnection and GB; and
- Pivotal Supplier Analysis.

The paper is aimed at providing a factual assessment of the SEM and is designed to be as comprehensible as possible for those not necessarily familiar with the detail of the market design and operation.

The MMU 2010 Annual report covering the period 1 January 2009 to 31 December 2009 is due to be published in the coming months.

6.2 KEY TASKS CARRIED OUT BY THE MARKET MONITORING UNIT

The MMU's key ongoing tasks have evolved since market commencement. The MMU's resources are focused on the following main tasks:

[5] http://www.allislandproject.org/GetAttachment.aspx?id=f3a6aeb9-d86c-4c70-96eb-4014e00a78af

6.2.1 MONITORING COMMERCIAL AND TECHNICAL OFFER DATA

The MMU is tasked with monitoring the data that is submitted by market participants for input into the Market Scheduling and Pricing (MSP) software. Typically this primarily translates into the examination of Commercial and Technical Offer Data (COD and TOD) submitted by price-making generators.

Large volumes of market data are taken from the SEMO systems each day onto the MMU secure server by way of an automated poll. The data is then automatically uploaded into the MMU central database. The MMU examines the Commercial and Technical Offer Data on a daily basis, reconciling movements with any known changes in what are normally expected as underlying inputs (fuel price movements being the biggest driver of change from one day to the next).

As part of this exercise, a note is taken of any potentially anomalous data submissions that cannot be immediately reconciled with information the MMU has to hand. These are then referred up to a wider level of investigation depending on the nature of the potential anomaly.

6.2.2 ANALYSING SEM OUTPUTS

Concurrent with the daily examination of COD and TOD is the analysis of the SEM outputs; most notably Shadow Price, Uplift and the Market and Dispatch Quantities for each Unit. The MMU, on a daily basis, build an explanation of what market input data (COD, TOD, Unit Availability and Demand) has acted to drive the market outcomes. This includes searching for the 'price-setting' unit where one can be identified. This work is also concerned with monitoring for instances which may arise, both within-day and across multiple days, under which one or more participants have an opportunity to benefit from the exertion of market power.

6.2.3 HARDWARE AND SOFTWARE MAINTENANCE AND DEVELOPMENT

The MMU systems sit on a dedicated server with several programs configured to automatically manage and query the market data that is downloaded from SEMO's systems. In addition, the MMU has developed several software tools for analysing the raw market data.

6.2.4 REPORTING

The MMU reports to the SEM Committee via the Oversight Committee. This reporting features regular written and oral reporting of market outcomes. The MMU also provides regular presentations and updates to the RAs, as well as circulating daily summaries of market behaviour to same. In addition, the MMU publishes reports from time to time.

6.2.5 ENFORCEMENT OF RULES

The work performed in analysing the detailed market data feeds into the overarching MMU function of ensuring that the market inputs and outputs are commensurate with the regulatory expectation under the standing rules. Typically, this body of work includes liaison with market participants and the System and Market Operators in order to pursue issues the MMU sees as relevant.

Depending on the outcome of the MMU's queries, this work may feed into the issuance of decisions, clarifications or directions by the SEM Committee.

6.3 KEY ISSUES IN 2009

6.3.1 REGULAR MONITORING AND REPORTING

The MMU conducts regular internal reports on the active monitoring of the SEM to the JMU, Oversight and SEM Committee. In April 2009 the MMU published its first Annual Public report (SEM/09/039)[6]. The report constitutes the MMU's public assessment of the performance of the SEM for the period 1 November 2007 to 31 December 2008. This is a major body of technical detail on the operation of the SEM market. All the information contained in the report is publicly available. The report covers the Bidding Code of Practice, Generator availability and bidding, fuel and carbon price trends, Generator schedules and dispatch, demand, capacity margin and market prices.

As the SEM structure develops and competition increases, the SEM Committee and the MMU will monitor the market bidding principles and consider appropriate modifications, if needed, given that their primary aim is to detect and report the abuse of market power. It is important to emphasise that any future changes to the bidding principles will be measured against the impact on the robustness of other parts of the market design, and considered in the light of the SEM Objectives.

6.3.2 ENFORCEMENT

During 2009 the MMU engaged in a number of discussions with several participants regarding interpretation of the Bidding Code of Practice. No formal complaints were received during 2009.

6.3.3 GOVERNANCE PROJECT

In Q4 2009 the MMU conducted a review of its Governance arrangements. After almost two years since market Go-Live, the review was to assess, amongst other matters, how well the Unit is performing its functions and identifying areas that could be improved. In October the MMU commissioned consultants to construct a questionnaire in order to obtain the views of external stakeholders, including (but not limited to) market participants. The review considered issues such as the role of the MMU in monitoring, analysing and making recommendations on bidding behaviour in the SEM. Implementation of the consultant's recommendations is expected in 2010.

[6] http://www.allislandproject.org/GetAttachment.aspx?id=f3a6aeb9-d86c-4c70-96eb-4014e00a78af

6.3.4 POWER PLANT CYCLING

Because of changes in demand and use of intermittent generation in power generation markets, many generation plants around the world are now becoming increasingly subject to cycling operation. Since the introduction of the SEM, cycling has become a prominent issue on the island of Ireland, with some generation plant experiencing more intense cyclic operation than before. A major SEM Committee Inquiry into the bidding activity of some Participants looked at how the costs associated with cycling should be accounted for within Commercial Offer Data (amongst other issues). The final decision on this Inquiry was published in June 2008 (SEM-08-069)[7].

The Power Plant Cycling report (SEM-10-002)[8] was prepared by the Market Monitoring Unit (MMU) and is aimed at informing industry on issues of power plant cycling. Much of the work presented in this report is derived from a recent report produced by consultants for the MMU. The report highlighted the issues and effects of 'cyclic operation' and the associated potential damage.

6.4 FUTURE WORK FOR THE MMU

In 2010, the SEM Committee have instructed to the MMU that their resources will be channelled mainly towards;

- Continuing regular monitoring and reporting;
- Continuing regular liaison with participants and operators;
- Further development of the software tools for analysing the raw market data;
- Contributions to policy development.

[7] http://www.allislandproject.org/GetAttachment.aspx?id=198ee8dc-15b4-4f22-8fed-8fd5f0eebc23

[8] http://www.allislandproject.org/GetAttachment.aspx?id=2f35718c-cd1d-4cc3-8706-1d9956de9231

7 SEM CAPACITY PAYMENTS MECHANISM

7.1 OVERVIEW OF THE CAPACITY PAYMENTS MECHANISM

The Capacity Payments Mechanism (CPM) falls wholly under the Joint Regulatory Arrangements and thus lies under the administration of the SEM Committee. It is managed within the electricity section of the Utility Regulator, with shadow management responsibilities falling to the CER. The CPM was designed in liaison with interested parties through extensive consultation. It is a fixed revenue system whereby Generators are paid regulated quantities (Capacity Payments) of money for providing available generation capacity to the market. The money is sourced by concurrent Capacity Charges levied on all Suppliers that purchase energy from the pool.

The core of the CPM takes the form of a fixed annual sum of money, called the Annual Capacity Payment Sum, which is calculated by the RAs on an annual basis. The Annual Capacity Payment Sums (ACPS) for the Trading Years 2007 to 2010 were / are:

Year	BNE Peaker Cost (€/kW/yr)	Capacity Requirement (MW)	ACPS (€m)	ACPS Change (% Yr on Yr)
2007	64.73	6,960	450.5	-
2008	79.77	7,211	575.2	27.70%
2009	87.12	7,356	640.9	11.40%
2010	80.74	6,826	551.1	-14.00%

Table 4: The Annual Capacity Payment Sums (ACPS) for the Trading Years 2007 to 2010

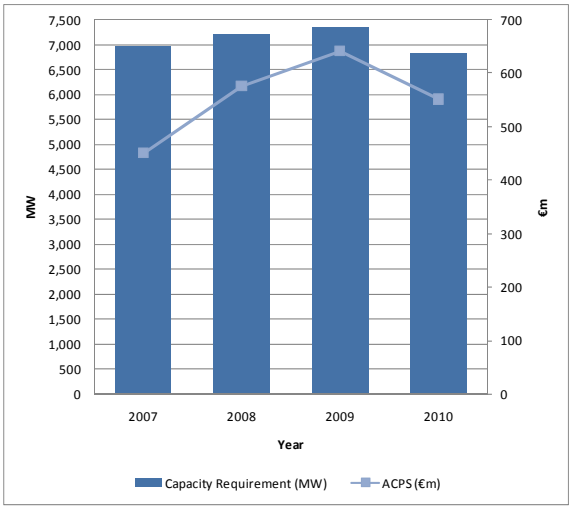

Figure 14: Historic levels of the Capacity Requirement and Annual Capacity Payments Sum

7.1.1 QUANTIFICATION OF THE ACPS

The regulatory exercise undertaken annually to quantify the ACPS involves the calculation of two key parameters which are multiplied together; a **Price component** and a **Volume component**:

$$ACPS\ (€) = Price\ (€/MW) \times Volume\ (MW)$$

The Price is set by reference to the annual Fixed Costs of a Best New Entrant Peaking Unit. The Volume is set by reference to the Capacity Required to exactly meet the Generation Security Standard.

7.1.2 CAPACITY PAYMENTS

The current mechanism for distribution of the pot is defined in the Capacity Payment Factors Decisions Paper published in December 2006 (SEM-231-06). [9]The CPM is split into 12 monthly pots. These are then further split into 3 payments which have a Flattening Power Factor applied:

- **Year Ahead - Capacity Period Fixed Sum (currently 30%)** - Profiled into Trading Periods based on Forecast Demand in that Trading Period relative to the minimum Forecast Demand in the relevant Capacity Period. Profile determined before start of Year.
- **Month Ahead - Capacity Period Variable Sum (currently 40%)** - Profiled into Trading Periods based on forecast Loss of Load Probability in that Trading Period relative to sum of forecast Loss of Load Probabilities for each Trading Period in the Capacity Period. Profile determined before start of Capacity Period.
- **Month End - Capacity Period Ex-Post Sum (currently 30%)** - Profiled into Trading Periods based on ex-post Loss of Load Probability in that Trading Period relative to sum of ex-post Loss of Load Probabilities for each Trading Period in the Capacity Period. Profile determined ex-post, after Capacity Period.

The following Figure 15 show's a high level over view of the capacity payment mechanism in the SEM.

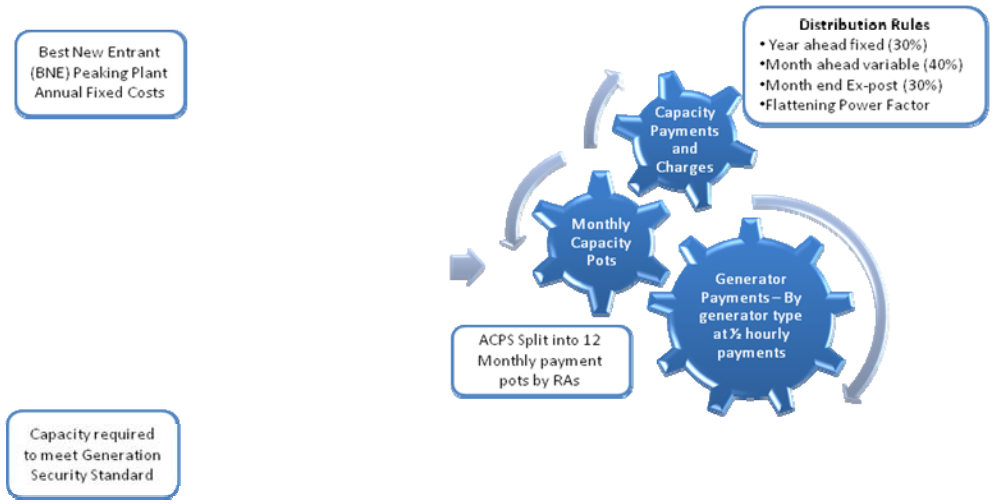

Figure 15: Overview of the capacity payment mechanism in the SEM

[9] Capacity Payment Factors Decision Paper - December 2006

7.2 OBJECTIVES OF CPM

The SEM Committee considers the CPM as a key feature of the SEM design. The SEM Committee believe that extensive analysis and consultation on this topic took place prior to SEM Go Live and that the concept of the CPM should remain in place.

The SEM Committee wishes to satisfy that the correct signals and appropriate incentives or rewards are inherent in the design, so as to meet its objectives optimally. In particular it is mindful that the CPM provides signals for new entry/investment and should reward plant and capacity in accordance with its performance.

The objectives of the CPM, as defined in the paper 'Capacity Payment Mechanism and Reserve Charging High Level Decision Paper' (SEM-53-05)[10] are:

- **Capacity Adequacy/ Reliability of the system**

The CPM must encourage both new construction and maintain availability of capacity in the SEM. Security of the system, in both the long and short-term will be the core feature of any CPM.

- **Price Stability**

The CPM should reduce market uncertainty compared to an energy only market, taking some of the volatility out of the energy market.

- **Simplicity**

The CPM should be transparent, predictable and simple to administer, in order to lower the risk premium required by investors in generation. A complex mechanism will reduce investor confidence in the market and increase implementation costs.

- **Efficient price signals for Long Term Investments**

In theory it would be possible to incentivise vast amounts of capacity over and above that necessary for system security in the SEM, although the cost of implementing such a scheme may be unacceptable to customers. The CPM should meet the criterion in this section at the lowest reasonable cost. Revenues earned by generators should still efficiently signal appropriate market entry and exit.

- **Susceptibility to Gaming**

The CPM should not be susceptible to gaming and, ideally, should not rely unduly on non-compliance penalties.

- **Fairness**

The CPM should not unfairly discriminate between participants. An appropriate CPM will maintain reasonable proportionality between the payments made to achieve capacity adequacy and the benefits received from attaining capacity adequacy. Buyers in the SEM should pay in proportion to the benefits they receive.

[10] Capacity Payments Mechanism and Reserve Charging High Level Decision Paper

7.3 CAPACITY REQUIREMENT AND ACPS FOR 2010

Following receipt of responses to the consultation paper on the Best New Entrant Price for 2010 which was published in July 2009 (AIP/SEM/09/072)[11], the SEM Committee published in August 2009 the Best New Entrant Price, Capacity Requirement and Annual Capacity Payments Sum for 2010 as set out in the Fixed Cost of a BNE Peaking, Capacity Requirement, and ACPS for 2010: Decision Paper (SEM-09-087): Decision Paper[12].

The Best New Entrant (BNE) Peaking Plant for 2010 is an **Alstom GT13E2** firing on **distillate fuel**, sited in **Northern Ireland**.

The estimated annualised fixed cost, net of estimated infra-marginal energy rent and ancillary service revenue, is **€80.74/kW/year.**

The Capacity Requirement for 2010 is **6,826MW.**

The product of these price and quantity elements yields an Annual Capacity Payment Sum (ACPS) for the 2010 Trading Year of **€ 551,133,375**

Work has already begun in the Fixed Cost of a BNE Peaking, Capacity Requirement, and ACPS for 2011.

7.4 CPM MEDIUM TERM REVIEW

The RAs have already produced a consultation document (SEM-09-023)[13], relating to the perceived volatility of the CPM and proposed a number of options to help reduce the level of volatility. In this paper, the SEM Committee signaled its intention to carry out a further review of the CPM in the medium term. The main purpose of this review is to examine if the current design of the CPM can be further improved to optimally meet the objectives set out in section 7.2

The RAs have now completed three iterations of calculating the capacity pot. The RAs believe that the SEM is now well enough established and there is sufficient historical data and opinions collated from the various consultation processes to allow the RAs to carry out a review of the CPM.

On the 8 of April 2009 the SEM Committee published a consultation paper (SEM-09-035)[14], documenting the scope of work that the SEM Committee proposed to carry out in relation to a medium term review of the Capacity Payment Mechanism.

---

[11] http://www.allislandproject.org/GetAttachment.aspx?id=78b20fef-dd75-43a7-8f52-67c7ca661545

[12] http://www.allislandproject.org/GetAttachment.aspx?id=33c31a80-8276-4aa8-82fe-16e6118da185

[13] http://www.allislandproject.org/GetAttachment.aspx?id=9f4bfc9b-5f60-4ca4-8a84-58158a5bb14f

[14] http://www.allislandproject.org/en/cp_current-consultations.aspx?article=4dde96cc-fdda-458b-9a3c-dc4a00692ac5

The RAs, on behalf of the SEM Committee, intend to review the current process used for distributing the capacity pot among generators and the calculations for payments by suppliers.

The areas under consideration in this paper (SEM-09-035)[9] are detailed below:

- Assessment of CPM in SEM (historical analysis);
- Impact of CPM on Customers;
- Incentives for Generators Capacity;
- Payments when Capacity is needed;
- Distribution of Capacity Payments;
- Capacity Requirement Calculation;
- WACC Methodology;
- Infra Marginal Rent & CPM;
- Impact of Exchange Rate in CPM;
- Treatment of Wind in CPM;
- Treatment of Interconnector in CPM;
- Relationship of CPM with Ancillary Services;
- Impact on Diversity of Generation & Security of Supply.

On 18 November 2009, the RAs hosted a workshop on the methodology used to calculate the Capacity Requirement used in the determination of the Annual Capacity Payment Sum.[15]

In the CPM Medium Term Review Information Paper (SEM/09/105)[16], published in November 2009, the RAs have included a time line detailing the expected durations of activities and the periods for further consultations on the topics under review within the CPM Medium Term Review. The RAs intend to carry out 2 consultations on the CPM Medium Term Review. The first consultation will be on aspects of the current CPM process. The second consultation will be on possible enhancements to the CPM.

Further details on the Decision Documents / Information Notes can be found on the AIP website[17].

[15] http://www.allislandproject.org/en/cp_decision_documents.aspx?article=ba1ce3a7-23ff-4dd3-8a88-cd715106eeaa

[16] http://www.allislandproject.org/GetAttachment.aspx?id=3ce981eb-c853-4b03-a87f-1213e9b03daf

[17] http://www.allislandproject.org/en/cp_decision_documents.aspx

8 SEM TRADING AND SETTLEMENT CODE

8.1 ROLE OF THE TRADING AND SETTLEMENT CODE TEAM

The Trading and Settlement Code team, based in CER, manages the SEM rules and the development of these rules on behalf of the SEM Committee, with the central focus of this role being on the SEM Trading and Settlement Code (the Code). The Code is a multilateral contract which sets out the rules and procedures concerning the sale and purchase of wholesale electricity in Ireland and Northern Ireland. The Code was designated by the RAs on 3 July 2007 and can be modified from time to time thereafter, in accordance with procedures set out in the Code.

The role of the Code Modifications Committee, which comprises representatives from industry participants, is, among other things, to consider and report on proposed modifications to the Code.

In addition to continuing its work overseeing changes to the Code and operation of the market, the Trading and Settlement Code Team together with their colleagues in the Utility Regulator are responsible for the area of Regional Market Integration and Interconnector trading.

8.2 MODIFICATIONS COMMITTEE

There were seven meetings of the Modifications Committee held during 2009. The Modifications Committee, guided by the Secretariat, continues to function well.

The Modifications Committee issues a Modification Recommendation Report to the RAs and the SEM Committee subsequently issues a decision on the proposed modification. The following can be found on the Single Electricity Market Operator's (SEMO) website[18]:

- All modification proposals submitted to date;
- All the SEM Committee decisions made on Modifications Proposals thus far; and,
- The latest version of the Code.

Working groups are being used effectively by the Modifications Committee to develop more complex Modification Proposals. In addition, the Modification Recommendation Reports are produced in a more timely fashion. In 2009, the Committee considered 46 Modification Proposals, a third less than in 2008. This decrease is to be expected as the market matures.

8.3 KEY CODE MODIFICATIONS

During the course of 2009, the SEM Committee has approved the following significant Code Modifications:

[18] http://www.sem-o.com/modifications_committee/

8.3.1 DUAL RATED GENERATOR AMENDMENT (MOD_34_08)

This Modification seeks to address the MSP software and market rules inability to handle dual-fuel generators. The rules and the software is particularly out-of-line with the arrangement of the Kilroot Generator as the unit has a higher output when fired on oil rather than coal and the unit requires a six-hour changeover period (which includes a significant drop in output for approximately one hour).

This arrangement is modelled in Kilroot's COD and TOD by pricing all but the last Price/Quantity pair on coal and the last pair on oil with a dwell time included in their TOD to cover the changeover. The result of this arrangement has been that the Kilroot units have been setting a high SMP in many Trading Periods.

Over the course of its development, four Working Groups were held, during which alternatives to this Modification Proposal were considered, and one consultation was undertaken by the Modifications Committee on this Modification. At the Modifications Committee meeting on 29 September 2009, the Modifications Committee recommended for approval this modification to address the dual rated issue.

The FRR was then sent to the RAs on 13 November 2009 and a final decision was made to approve the Modification Proposal by the SEM Committee in early 2010. The system changes required to implement this Modification Proposal will be deployed in October 2010.

8.3.2 AGGREGATE PAYMENTS FOR INVOICES (MOD_49_08)

This Modification, proposed by the Market Operator, seeks to provide a means for Participants to reduce the number of payments they need to make per month, by grouping payments for the same account, for the same invoice type (trading, capacity or market operator charge) and same due date into one single payment. In doing so, this reduces the number of payments per month from 28 to 10 and therefore reduces the high cost of processing these payments relative to the payment value. Participants can continue to make individual payments if they so wish, but they have the additional flexibility to amalgamate certain invoice payments. This Modification was approved through a SEM Committee letter in February 2009.

8.3.3 VALIDATION OF TECHNICAL DATA: ENDURING VALIDATION PROCESS (MOD_47_08)

This Modification Proposal, raised by the System Operators, seeks to put in place an enduring process for the validation and control of the Technical Offer Data submitted by Participants in respect of their Generator Units. If there is an error in the Technical Offer Data used in the market, it may have a significant impact on the resulting System Marginal Prices (SMP). However, this validation ensures that there are more controls put in place around this data. This Modification Proposal was approved in May 2009 by the SEM Committee, with the associated system changes due to be deployed in October 2010.

8.3.4 MOD_04_09, MOD_05_09, MOD_06_09 AND MOD_13_09.

These Modifications were originally raised as one Modification Proposal (Mod_64_08). However they evolved into four separate Modification Proposals, each addressing a separate aspect of the whole process from the connection of a Generator Unit to it achieving a class of Price Maker (if it has the choice and wishes to do so). These Modifications, seek to address issues concerning the timelines for the SEM registration process, payments for Generation post energisation (and the interaction with the Effective Date), the connection or energisation process and meter installation and validation. These Modifications were the subject of separate Working Group meetings

which assisted in developing the Modifications. All were approved in April and May 2009 through SEM Committee decision letters.

8.3.5 PARAMETERS

During 2009, the RAs consulted on several policy-related Code parameters. The Price Cap, Price Floor and the Uplift parameter values to apply in 2010 remained unchanged from the 2009 values. The RAs also issued a consultation and decision paper on the Value of Lost Load to apply for the SEM year 2010. This was up-rated by applying the weighted average of the year-on-year increases in the Irish and UK Harmonised Index of Consumer Prices. Thus, VOLL for 2010 has been set at €10,273/MWh.

In addition to the above, the SEM Committee published decision papers, together with relevant MO and SOs reports, responses and comments from interested parties on the following TSC parameters for 2010:

- Credit Cover parameters;
- MSP Software parameters;
- Annual Capacity Exchange Rate;
- Uninstructed Imbalances parameters;
- Flattening Power Factor; and,
- Settlement Recalculation Threshold.

There was minor changes proposed by the MO in their reports regarding Credit Cover parameters and the Annual Capacity Exchange Rate values consulted upon were confirmed in the SEM Committee decision paper.

8.4 OTHER SIGNIFICANT ISSUES

8.4.1 MSP SOFTWARE – SCHEDULING MECHANISM & PRICING

As noted in last year's SEM Committee Annual Report, the RAs became aware of SEMO's use of Mixed Integer Programming (MIP) rather than Lagrangian Relaxation (LR) in the MSP Software. Throughout 2008, the RAs consistently advised SEMO to make participants aware of this internal business process and to raise an appropriate modification to incorporate it into the Code. In 2009, SEMO published their policy on the "Use of MIP for Determination of Market Schedules[19]". This paper outlines the situations under which the Mixed Integer Programming (MIP) solver should be used to generate and publish the Market Schedules (Ex-Ante, Ex-Post Indicative and Ex-Post Initial) instead of the Lagrangian Relaxation (LR). The paper sets out the triggers for checking with MIP, in addition to the criteria used to publish market schedules with MIP.

[19] http://www.allislandmarket.com//FTP/Market%20Publications/Ad%20Hoc%20Publications/MIP_policy_V3.0%20-%20Use%20of%20MIP%20for%20Determination%20of%20Market%20Schedules.pdf

One further improvement made with regard to the process for choosing MIP and LR is that the Market Auditors have audited the process of choosing the solver for 2009. As discussed in the following section, the Market Audit is expected to be presented to the Modifications Committee in March 2010.

In late 2009, SEMO began a study on the respective merits of using LR and MIP as the default optimisation programme in the SEM. The results of the study are expected to be published in spring 2010.

8.4.2 INTERIM MARKET AUDIT

As part of the Code rules, an annual Market Audit is undertaken, the scope of which is consulted on and determined by the RAs. For the audit for the second year of the market, the RAs determined the scope in July 2009 and the market auditor, Deloitte Touche Tohmatsubegan, carried out the audit shortly thereafter. As for 2007/08 the scope for the 2009 Audit focused on compliance with the TSC provisions by SEMO. The full market audit report is due to be completed in Q2 2010 and presented to the SEM Committee and participants.

8.5 FUTURE WORK

In addition to the above areas the TSC team are working closely with other teams in the RAs who intend to propose modifications to the market rules as a result of policy decisions of the SEM Committee. Relevant Areas currently under review include:

- Scheduling and Dispatch;
- Capacity Payments Medium Term Review;
- Demand Side Response;
- Locational Signals and Losses.

9 SINGLE ELECTRICITY MARKET OPERATOR REGULATION

9.1 ROLE & ESTABLISHMENT OF SEMO

The development of the SEM led to a requirement for a Single Electricity Market Operator (SEMO) to administer the market. With this in mind the RAs on behalf of the SEM Committee approved the intention of EirGrid and SONI, the transmission system operators for Ireland and Northern Ireland respectively, to establish SEMO on a contractual Joint Venture basis.

SEMO's role in the market is explicitly defined in the Trading and Settlement Code (the Code), which sets out the rules, procedures and terms and conditions which all parties, including SEMO, must adhere to in order to participate in the SEM. In addition, both EirGrid and SONI must comply with the conditions imposed by their respective MO licence.

As defined in section 1.3 of the Code, SEMO's role can be summarised as being "to facilitate the efficient, economic and coordinated operation, administration and development of the Single Electricity Market in a financially secure manner".

SEMO's performance thus far is detailed in the monthly Market Operator reports which are available from SEMO's website (http://www.allislandmarket.com/). In summary, SEMO has performed well and continues to administer the market effectively.

9.2 SEMO REGULATION

The SEMO Regulation team, based in the Utility Regulator, is responsible for all regulatory activities regarding SEMO. The key activities carried out by this team since market the SEM commenced are detailed below:

9.2.1 MARKET OPERATOR LICENCE COMPLIANCE

The SEMO Regulation team monitors the status of both MO licences (SONI and Eirgrid) on an ongoing basis to ensure that the requirements of the licence are being met and managed. SEMO are required to produce deliverables on an annual basis and the regular checks and communication with SEMO have, in the main, ensured the timely delivery of these licence requirements.

9.2.2 COMMUNICATION WITH SEMO

The SEMO Regulation team has built up a good working relationship with all sections of the SEMO organisation. The relationships have developed through participation in industry meetings such as the Modifications Committee Meetings, Market Operator User Group Meetings and Market Operator Special Topic Meetings. There is also a regular monthly meeting between SEMO and RAs which covers all aspects of SEMO Regulation activities such as licence compliance and the status of any ongoing projects being managed by SEMO. In addition to the above, quarterly meetings between SEMO management and the relevant RA Directors, cover strategic areas and major projects, along with an overview of the financial status of SEMO. The regular meetings have resulted in an open and cooperative relationship being developed between SEMO and SEMO Regulation team.

9.3 PROJECTS RUN BY SEMO

A key area of work for the SEMO Regulation team has been to work closely with SEMO in relation to the major projects requiring regulatory approval for cost recovery. The main projects that have occurred within the period 2009/2010 are detailed below.

9.3.1 SEMO'S REVENUES AND TARIFFS 2009 – 2010

The SEMO Regulation team was the key point of contact for the development of SEMO's revenues and tariffs for the period October 2009 to September 2010. Key activities and deliverables included:

- Analysis of SEMO's revenue submission;
- Analysis of constraints and other high value costs; and,
- Approval of the SEMO costs for the tariff year.

The economy in both jurisdictions, Northern Ireland and Republic of Ireland, are facing extremely challenging times. Most businesses are currently optimising their operations in order to find opportunities for more cost-effective processes and organizational structures. Therefore, in order to ensure cost-effectiveness and sustainability over the current tariff period, the SEMO Regulation team undertook a rigorous analysis of each cost component from SEMO's submission.

The total revenue sought by SEMO to cover its costs for the tariff period was €24,952,000. Supported by a comprehensive scrutiny of SEMO's submission carried out by the SEMO Regulation team, the SEM Committee have decided that SEMO's revenue should be fixed at €22,181,519 for the current tariff period, generating an economy of 11% on the initially proposed expenditure.

9.3.2 BIANNUAL STRATEGY FOR IT RELEASES 2009-11

Following the successful deployment of the SEM Day 1+ Project, SEMO consulted with the industry (via direct meetings with the SEMO Regulation Team 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 Central Market Systems (CMS). From these meetings, participants supported a structured IT release strategy. As a consequence of these considerations, 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.

9.3.3 TSC MODIFICATIONS PANEL

In addition to the above activities, the SEMO Regulation team has a shadow role in relation to work carried out on the Code, which is led from the CER. This work entails attending Code Modifications meetings, reviewing Final Recommendation Report on Modifications, with a particular focus on Modifications that may incur a financial cost.

9.4 SEMO REGULATION TEAM FUTURE WORK PLAN

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.

The SEMO Regulation team on behalf of the SEM Committee will focus on the effects on SEMO, on the Central Market Systems of the areas of work listed in section 8.5 and regional integration.

10 SEM RELATED DEVELOPMENTS

10.1 INTRODUCTION

There are a number of areas related to the SEM where work has been undertaken by the RAs on behalf of the SEM Committee on an all-island basis. This section looks at some of the projects that have developed in 2009.

10.2 DISPATCH AND SCHEDULING

In 2009 The SEM Committee instructed further consultation in relation to relevant scheduling and dispatch matters including guiding principles for dispatch of all generation, the handling of constraints /'curtailment' and associated payments under the SEM Trading and Settlement Code (the TSC), and tie breaking rules for Price Takers. This resulted in a consultation paper in July of 2009 (Ref: SEM-09-073)[20].

The consultation contains discussions and sets out options/proposals in relation to the following matters:

- Dispatch principles for the island:
    1. Underlying principles for the dispatch of all plant in the island;
    2. treatment in dispatch of generation with firm, non firm, partial firm access;
    3. treatment in dispatch of generation afforded priority dispatch, treatment of hybrid plant in the context of priority dispatch;
    4. principles for dispatch in the context of tie breaking situations;
    5. The dispatch principles will address the above for generation connected at both transmission and distribution.
- Trading and Settlement Code matters in the context of the above dispatch principles:
    1. compensation for 'curtailment' as defined;
    2. reiterate position stated in the discussion paper regarding the treatment of firm access for Price Taking Generation Units in the context of previously stated policy and in the context of the treatment of Price Making Generation Units under the TSC, and
    3. relevant Trading and Settlement Code matters arising from the dispatch principles work set out above:
        - determination of SMP when demand is met in by Price Takers in the market schedule;
        - quantity of generation paid Pfloor in Excess Generation Event;

[20] http://www.allislandproject.org/GetAttachment.aspx?id=54a53952-22c8-4196-975f-fe9ab14ec2a5

- allocation of access to the market schedule for plants located behind constraints

A Draft Decision paper is planned to go to the SEM Committee in 2010 and for publication shortly thereafter. After the draft decision is published, there will be follow up work packages and potential future consultations on specific work items.

10.3 ANCILLARY SERVICES

Ancillary Services are products, other than energy, that are required to ensure the secure operation of the transmission system. The Transmission System Operators (TSOs), EirGrid in Ireland and SONI in Northern Ireland, are charged with providing a secure, reliable and efficient electricity system and, in that context, for ensuring the availability of all necessary Ancillary Services (AS). AS payments and Other System Charges are paid/levied outside the Single Electricity Market (SEM) by the TSOs on a jurisdictional basis

Following consultation, the SEM Committee published a High Level Decision paper providing a policy framework for the harmonisation of AS across the island. This decision included information on the all-island AS arrangements for generator payments/charges, as well as a commitment to incentivise compliance by generators with the Grid Codes. The work is to provide a harmonised regime for provision and procurement of ancillary services across the island of Ireland.

In June 2009, the RAs published a consultation paper (SEM-09-062 - Harmonised Ancillary Services and Other System Charges Rates Consultation[21]), developed by the SOs, detailing the proposed payments and charges to be applicable in the first year of implementation. Subsequently, the RAs reviewed the proposal and comments received and reached a decision in August 2009 to postpone the harmonised Ancillary Services Project Go-Live until 1 February 2010 to allow adequate time for all involved to smoothly effect the transition to the new arrangements.

10.4 REVIEW OF LOCATIONAL SIGNALS IN THE SEM (GTUOS AND TLAFS)

The review of locational signals was initiated in January 2009 as a joint undertaking by the RAs and the System Operators to address the significant concerns raised by market participants in response to previous separate consultations on Transmission Use of System Charges (TUoS) and Transmission Loss Adjustment Factors (TLAFs). With significant increases in new generation expected to come on stream in the coming years the RAs asked the SOs to review the methodology for these locational signals in the SEM. This lead to the System Operators' Review of Locational Signals on the Island of Ireland Workshop (SEM-09-046)[22].

In May 2009 the RAs published on their website a System Operator consultation paper on a comprehensive range of methodology options to be considered for the implementation of location signals (TUoS and TLAFs) on the island of Ireland (SEM-09-060 Methodology Options for Locational Signals)[23].

---

[21] http://www.allislandproject.org/GetAttachment.aspx?id=4826fcd0-ba52-4f5d-987d-245fe49dd19b

[22] http://www.allislandproject.org/GetAttachment.aspx?id=500b6e09-0e2b-4eda-b114-6f4ded2a7b74

[23] http://www.allislandproject.org/GetAttachment.aspx?id=79519e08-94bb-414b-a28e-5b14b7741367

Following this consultation the SOs further developed their preferred option(s) and have produced a more detailed consultation paper (including indicative tariffs) focused on the preferred option(s), which was consulted upon in the autumn of 2009. It was decided to omit Supplier Use of System Charging from this as it was felt that locational charging for Supply was outside the SEM high level design. The RAs are currently considering the various options for all island generator TUoS and TLAFs and the responses received to the most recent consultation. It is expected that the new arrangements for Locational Signals will go live by Q4 2010.

10.5 DEMAND-SIDE MANAGEMENT (DEMAND RESPONSE)

The SEM Committee and the RAs understand that demand response has the potential to be an important element of the all-island market, delivering economic and environmental benefits. In a future with, at certain times, high availability of generation from renewable sources, it will be important for demand to be able to flex freely to use the inexpensive and low carbon electricity when available. This could largely mitigate the need for capital intensive storage schemes. On shorter timescales it will be necessary for the TSOs simply to balance the system. To this end the RAs have initiated a programme to develop a coordinated and sustainable demand response on the island of Ireland. The RAs will be working closely with DETI and DCENR and other stakeholders to ensure that the various workstreams involved are coordinated to deliver this. These include:

- Overall demand reduction/energy efficiency;
- Time of Use reduction/load shifting;
- Demand Side Bidding;
- Generation Aggregation; and,
- Smart Grids.
- Medium Term Issue including DSUs and AGUs

This programme began in December 2009 and has entailed:

- International best practice review
  - Characteristics of the demand side on the island;
  - International review of DSR case studies;
  - Evaluation of the DSR potential on the island.
- Development of 2020 Vision, gap analysis and policy pathways, including demand side vision workshop.
- Public consultation setting out a future vision for DSM in Ireland and measures to achieve that.
- Review of consultation responses.
- Report on final recommendations for implementation to be issued as final SEM Committee Decision paper

10.6 UPLIFT PARAMETERS REVIEW

Given the importance of the uplift component of the energy price in the SEM and its impact on consumer prices and generator revenues, the SEM Committee had decided to review the performance of this aspect of the market to date and measure this against possible alternatives. The review of uplift included the following analyses:

- Measure of uplift component of price;
- Actual start-up and no-load costs;
- Revenue through uplift and infra-marginal element;
- Assessment against SMP objectives;
- Overview of incentive compatibility of SMP algorithm;
- Modelling an alternative cost recovery method using side payments and assessment of these against SMP objectives.

On 17 June 2009, the SEM Committee issued the paper "SMP Uplift Parameters 2009; Consultation Paper" (SEM-09-066[24]). The consultation paper presented some analysis of the behaviour of uplift since 1 November 2007 and the paper considered the performance of uplift as measured against price stability and the stated SMP Objectives that:

- The System Marginal Price should reflect the marginal costs of producing or consuming electricity during the Optimisation Time Horizon;
- Energy prices should be reflective of underlying market dynamics. Consequently the recovery of Start Up Costs and No Load Costs through SMP should not deviate significantly from the Shadow Prices (Uplift Profile Objective);
- The revenue paid through Uplift revenues should be minimised (the Uplift Cost Objective).

In September 2009 The SEM Committee published a Decision Paper "SMP Uplift Parameters 2010 Consultation Paper (SEM-09-095[25])". The SEM Committee was grateful to the parties who submitted comments and is of the view that no new evidence has been brought to its attention which suggests that change in the uplift parameter values is necessary at this stage. In light of the performance of the current uplift parameters when considered through the paradigm of SEM price stability and the stated SMP objectives, the SEM Committee sees no reason to depart from the value of $\alpha = 0$, $\beta = 1$. Furthermore, the RAs consider that the setting for δ, which at its current value contributes to the emphasis on the Profile Objective, should be maintained at $\delta = 5$.

[24] http://www.allislandproject.org/en/TS_Current_Consultations.aspx?article=2100dac1-108c-44ea-9294-aca5d2be1a32

[25] http://www.allislandproject.org/GetAttachment.aspx?id=3a9d4b0c-f62f-4ee6-946d-2b7fc76499cb

10.7 REGIONAL INTEGRATION AND INTERCONNECTOR TRADING

In addition to continuing its work overseeing changes to the Code and operation of the market, the Trading and Settlement Code Team together with their colleagues in the Utility Regulator are responsible for the area of Regional Market Integration and Interconnector trading. The SEM Committee, as part of their work plan for 2009, asked the RAs to review the issues surrounding interconnection between Ireland and Great Britain and to develop a strategy for further market integration with neighboring markets as physical interconnection increases.

10.7.1 REVIEW INTERCONNECTOR TRADING

At their March 2009 meeting, the SEM Committee discussed a paper on interconnector issues[26] and the SEM. The original request for a paper was prompted partly by a perception that use of the Moyle Interconnector had changed significantly after November 2007 but was probably not being used as effectively as it might be and partly by a concern that the rules governing its use resulted in high costs when SO-SO trades had to be entered into. In addition the arrangements were contributing to security of supply concerns, particularly in Northern Ireland.

The paper recognised that flows in both directions across the Moyle Interconnector had not responded as fully as they might to price arbitrage opportunities between the SEM and the GB market. It identified a number of reasons why this might be the case, including the availability of capacity on the Moyle Interconnector (IC) and its cost, the risks created by the misalignment of the SEM and GB market (e.g. gate closure and ex-post pricing) and other trading risks such as the lack of liquidity in day ahead markets and network (triad) charging in GB. The paper noted that, with the prospect of increased interconnection in the medium term, the main barriers to increased IC use by participants and the promotion of within day trading would need to be addressed. The SEM would also need to be developed to conform to European Union regulations and to maximise the benefits of increased interconnection. The paper concluded by recommending a number of steps:

- Supporting the development of shorter term capacity auctions for the Moyle Interconnector and permitting more flexible use of unused capacity on the Moyle Interconnector by the SOs;
- Investigating the costs and benefits of removing the 80 MW export restriction on the Moyle Interconnector;
- Addressing, in the medium term, identified market misalignments between the SEM and the GB markets that frustrate interconnector usage; and
- Increasing liquidity in both the SEM and GB markets.

10.7.2 REGIONAL INTEGRATION

Following their discussion in March, the SEM Committee commissioned a paper on market coupling and the SEM; and on indicative proposals for intra-day trading on interconnectors between the SEM and its regional market. The SEM Committee asked that, in considering the latter, the costs and benefits of increased interconnection for the SEM should be considered.

[26] http://www.allislandproject.org/en/TS_Decision_Documents.aspx?article=8ab12afb-d1e4-413e-bc33-7e17a5683755

A consultation paper on SEM Regional Integration[27] was published in September 2009. It considered the costs and benefits of increased interconnection and examined the question of how best to coordinate the allocation of available transfer capacity on interconnectors in the SEM across various time frames – from long to medium term through to day-ahead, intra-day and in balancing markets. The paper also examined in detail the wider, more strategic implications for the integration of the SEM with its neighbouring markets in the context of recent initiatives at the European level. The paper recommended the following:

- The engagement by the RAs with stakeholders at European level to influence the development of policy on integration of electricity markets at a regional and European level;
- The development of a co-ordinated approach to congestion management with Ofgem, and in particular the explicit auctioning of capacity on ICs;
- The development of SEM rules on use-it-or-lose-it and IC trading to comply with the requirements of European legislation and to maximise the benefits of interconnection and intermittent generation to customers.

10.7.3 PROPOSED DECISION AND NEXT STEPS

The Decision Paper considers the responses of interested parties to the Consultation Paper by topic, provides the SEM Committee's decision in each case in the light of those responses and proposes a programme of work for the RAs to achieve the SEM Committee's overall aim of maximising the efficient use of existing and future interconnectors between the SEM and its neighbouring markets over the next few years. This is achieved by ensuring as far as is possible, given the current design of the SEM, that interconnector users have access to the maximum available transfer capacity on those interconnectors across a range of time frames, and can respond efficiently to wholesale price differentials between the SEM and its neighbouring markets.

The SEM Committee Decision[28] published in March 2010 sets out a way forward for the following work areas:

- Forward Explicit Auctions;
- Day Ahead Coupling;
- Intra-Day Trading;
- SO - SO Trading;
- Capacity Payments;
- Barriers to Trading;
- TSC Changes relating to East West Interconnector;
- Developments at European Level.

---

[27] http://www.allislandproject.org/GetAttachment.aspx?id=3ea8c7f0-6184-4501-9e17-ca59bb356bd4

[28] http://www.allislandproject.org/en/TS_Decision_Documents.aspx?article=beea10b1-a6c2-4993-8cfe-037a57dee8f9

10.8 RETAIL MARKETS AND THE SEM

10.8.1 DEVELOPMENT OF POLICY TO ALIGN RETAIL MARKETS

The retail markets Northern Ireland and Ireland currently operate on a jurisdictional basis with an understanding of the need for harmonised goals, where appropriate and cost effective, in relation to energy retail markets.

The RAs have already highlighted these goals in their Memorandum of Understanding[29] in 2006, which stated that:

"CER and the Utility Regulator will apply a transparent, consistent and harmonised approach to the regulation of the wholesale and retail markets in a manner which supports effective competition and equal treatment of participants and customers regardless of their location. Such approach will encompass application of the same principles of regulation to:

- **NIE Energy Supply in Northern Ireland and ESB Customer Supply in Ireland:**

- Ring fencing arrangements Tariff/revenue regulation;
- Economic Purchasing Obligations;
- Operation of PSO arrangements.

- **For all suppliers:**

- Supplier switching arrangements/requirements;
- Codes of practice."

Retail competition in energy can deliver benefits for consumers, so long as it is developed efficiently and according to a model that suits the conditions in both jurisdictions. These benefits might include:

- **Price benefits** – from creating competitive pressure to reduce costs in supply, and to procure better;

- **Innovation** – new suppliers, with experience in other markets, are likely to bring to market different products that extend consumer choice. This will likely include dual fuel options;

- **Service standards** – Competitive pressures, combined with effective industry systems, should enable high service standards to be delivered flexibly and cost effectively. Regulation can only effectively set a single standard which might be the average of consumers' wishes, while competition can allow different supplier and product offerings to differentiate service levels, with prices varying accordingly.

The benefits of competition are potentially obtainable within each jurisdiction separately. However there may be enhanced opportunities (due to market scale, supplier business opportunities, efficiencies in operation, dual fuel potential) if energy retail developments are harmonised. North and South have retail markets with different structures e.g. licensing regimes, retail market systems, metering infrastructure and tariffs. With the launch of the SEM and the SEM Committee there were a number of initiatives to harmonise the approach to the regulation of the retail markets in Northern Ireland and Ireland.

[29] http://www.official-documents.gov.uk/document/cm70/7002/7002.pdf

In the retail market, work has also progressed on joint studies in relation to over/under-recovery correction factors and also the potential for harmonising supply tariff structures. The results of this work will feed into developing electricity regulation "roadmaps"[30].

Pursuing the benefits from competition has been embraced by both RAs and substantial investments have been made in automated systems to enable energy consumers to switch suppliers smoothly. This is particularly the case in the Ireland where full switching systems are already in place for both gas and electricity sectors. Work is ongoing between the RAs on areas of potential harmonisation for the retail markets e.g. on designing a common harmonised approach to market messaging and supplier interfaces which is important for ease of supplier operation across the island. Furthermore, it is clear that there is strong consumer and stakeholder support for further development of competition.

10.8.2 DEVELOPMENT OF COMPETITION

Until recently, energy retail competition, most notably in the domestic sector, has been slow to emerge on the island. For example, recent research in Northern Ireland, confirmed low levels of switching in most gas and electricity sectors, and none at all at the domestic level. In Ireland there has been significant competition amongst Large Energy Users for some time and competition in the Small to Medium Enterprises sectors have continued to grow. The competitive entry of both Bord Gais and Airtricity in 2009 has introduced competition for the first time into the domestic sector and at a very encouraging level.

Figure 16 shows the evolution in electricity customer transfers in Northern Ireland.

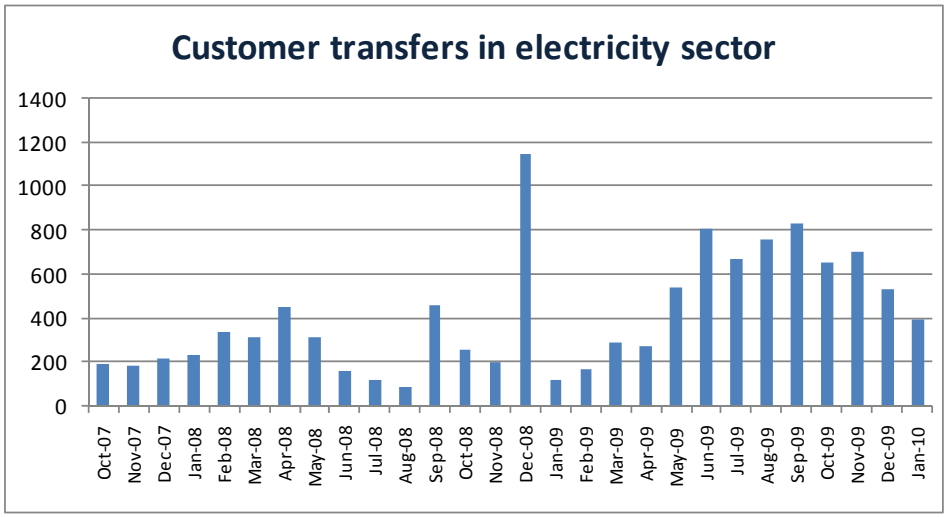

Figure 16: Evolution in NI electricity customer transfers - Source: NIE T&D

[30] Roadmap for Deregulation of the Electricity Retail Market - http://www.cer.ie/en/electricity-retail-market-current-consultations.aspx?article=df783f6c-1e9f-436e-a2e0-d89edf4daa9b&mode=author

Figure 17 shows the switching activity in the Electricity markets in the Republic of Ireland.

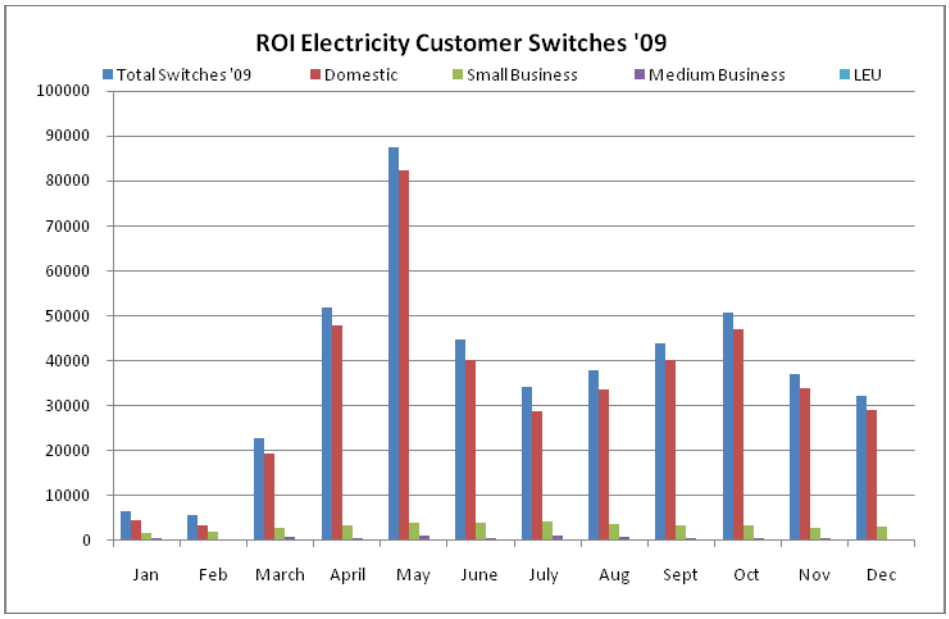

Figure 17: ROI Evolution in electricity customer transfers

10.8.3 CURRENT RETAIL TARIFFS

In October 2009, both regulated incumbent suppliers, North and South, announced a regulated tariff decrease. In Northern Ireland, NIE Energy Supply (NIEES) announced a decrease of 5%, on top of a 10.8% in year tariff decrease in January 2009. In Ireland ESB Customer Supply (ESB CS) announced an average decrease of 0.2% across fixed regulated tariffs, this was further to an average 10.3% decrease in regulated tariffs from 1st May 2009 (which was implemented through a reduction in distribution network charges). The key driver for both decreases has overwhelmingly been the wholesale generation costs. The main reason behind the decrease in generation costs is the decrease in international fuel prices.

11 FUTURE WORK PLAN FOR THE THIRD YEAR OF THE SEM

The SEM Committee has agreed a significant work plan for 2010, which involves further development of the market. Some of the main items included on this work plan are as follows:

11.1 CPM MEDIUM TERM REVIEW AND 2011 BNE CALCULATION

The SEM Committee has now completed several iterations of calculating the capacity pot. They believe that the SEM is now well enough established and there is sufficient historical data and opinions collated from the various consultation processes to allow the RAs to carry out a review of the CPM. In 2010 the RAs will assess the objectives of the CPM to ensure they are being met in an appropriate manner, they will also review a wider range of issues such as the manner in which the monies in the pot are calculated and distributed. A Consultation paper will be published in September 2010.

Any options proposed will be considered in terms of whether they would significantly change the design of the SEM and if they will compliment the objectives of the SEM. The SEM Committee is mindful not to propose options that are disproportionately expensive or different to the current design relative to the benefits the changes would create. As stated in 7.3 work has already begun in the Fixed Cost of a BNE Peaking, Capacity Requirement, and ACPS for 2011.

11.2 DEMAND SIDE RESPONSE

The Demand Response has the potential to be an important element of the all-island market, delivering economic and environmental benefits; it entails actions that influence the quantity or patterns of use of energy consumed by end users, such as actions targeting reduction of peak demand during periods when energy-supply systems are constrained. Following consultation we will be setting out a future vision for DSM in Ireland and a defined set of measures to achieve this. Recommendations for implementation will be issued as final SEM Committee Decision paper.

11.3 DISPATCH AND SCHEDULING

As stated in 10.2, a decision paper is planned to go to the SEM Committee in 2010 and for publication shortly thereafter. After the decision published, there will be follow up work packages and potential future consultations on specific work items.

11.4 SEM DIRECTED / NON DIRECTED CONTRACTS

The SEM Committee will continue to monitor the offering of Directed Contracts and Non-Directed Contracts in the year 2010. The RAs regularly engage with market participants on their views on this process with the ultimate aim of facilitating them and customers to manage risks in the market.

11.5 REGIONAL INTEGRATION

In March 2010 the SEM Committee has published a decision paper following on from the consultation paper on SEM Regional Integration. It has considered the responses of interested parties and proposes a programme of work for the RAs to achieve the SEM Committee's overall aim of maximising the efficient use of existing and future interconnectors between the SEM and its neighbouring markets over the next few years.

11.6 MARKET POWER AND LIQUIDITY IN THE SEM

The SEM Committee has noted the importance of reviewing and improving liquidity in the wholesale electricity market with an emphasis on fostering increased competition and mitigating barriers to new entry in both the spot and contract markets. As the SEM structure continues to develop and competition increases, the SEM Committee has planned to review the extent of market power in SEM.

The SEM Committee received a submission from ESB regarding industry changes and progressive deregulation of ESB. The SEM Committee has decided, therefore, to amalgamate examination of the ESB submission and the Market Power and Liquidity reviews into one overall review. This review will include an assessment of current and likely future levels of market power/liquidity in the SEM, the effects of market power mitigation measures, the effects of ESB's reintegration proposal on market power/liquidity and ways in which this might be mitigated as well as looking at other ideas for improving liquidity and/or reducing market power.

There will be full consultation with market participants as the review progresses. It is expected to be completed by the end of the year.

11.7 UPLIFT

Given the importance of the uplift component of the energy price in the SEM and its impact on consumer prices and generator revenues, the SEM Committee has decided to review the performance of this aspect of the market to date and measure this against possible alternatives. An alternative to the current uplift mechanism will be considered as part of the review and measured against the SEM Objectives.

12 APPENDIX

12.1 ACRONYMS

ACPS	Annual Capacity Payments Sum
AGU	Aggregated Generating Unit
AS	Ancillary Services
BCOP	Bidding Code of Practice
BETTA	British Energy Trading & Transmission Arrangements (GB wholesale electricity market)
BNE	Best New Entrant
CER	Commission for Energy Regulation
COD	Commercial Offer Data
CMS	Central Market Systems
CPM	Capacity Payments Mechanism
DC	Directed Contracts
DCENR	Department of Communications, Energy and Natural Resources
DETI	Department of Enterprise, Trade and Investment
DLAF	Distribution Loss Adjustment Factors
DSR	Demand Side Response
DSU	Demand Side Units
JMU	Joint Management Unit
LR	Lagrangian Relaxation
MDP	Metered Data Provider
MIC	Maximum Import Capacity
MIP	Mixed Integer Programming
MIUN	Modified Interconnector Unit Nomination
MMG	Market Modelling Group
MMU	Market Monitoring Unit
MO	Market Operator
MOUG	Market Operator User Group
MSDP	Market System Development Plan
MSP	Market scheduling and Pricing Software
MW	Megawatt
NIAUR	Northern Ireland Authority for Utility Regulation – The Utility Regulator
NDC	Non-Directed Contracts
PES	Public Electricity Supplier
PFLOOR	Market Price Floor
PSO	Public Service Obligation
RAs	Regulatory Authorities
SEM	Single Electricity Market
SEMC	Single Electricity Market Committee
SEMO	Single Electricity Market Operator
SMP	Single Marginal Price
SO	System Operator
SONI	System Operator of Northern Ireland
SRMC	Short Run Marginal Cost
TLAF	Transmission Loss Adjustment Factors
TOD	Technical offer Data
TSO	Transmission System Operator
TUoS	Transmission Use of System