# Single Electricity Market Committee

# Harmonised All-Island Ancillary Services Policy

## A Decision Paper

**SEM-08-013**

**27th February 2008**

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# 1 Executive Summary

In August 2007 the Regulatory Authorities (RAs) published a consultation paper[1] by the Transmission System Operators (TSOs) which set out the harmonised all-island policy options for Ancillary Services (AS) and related payments/charges, for implementation post SEM go-live. The RAs have reviewed the comments received to this consultation paper, to which a total of 12 responses were received. The SEM Committee[2] has determined that this is an SEM Committee matter within the meaning of the legislation and has made decisions on the future treatment of harmonised AS and related charges across the island in the SEM. These decisions are presented in this high-level decision paper and are summarised below.

Further details on these AS policy principles, including the timeline for their implementation and proposed initial AS values/rates, will be the subject of industry workshops to be hosted by the TSOs in Quarter (Q) 2 of this year. This will be followed by a detailed consultation paper by the TSOs in Q3 and a decision by the SEM Committee in Q4.

## 1.1 Unbundling of Services

AS procured by the TSOs will be unbundled to increase transparency and accountability and to improve competition and flexibility in the SEM. Procurement of services will be based on the ability to deliver the service required for system operation and will be independent of the technology used in providing the service.

## 1.2 Operating Reserve

The SEM Committee has decided to introduce a reserve remuneration scheme which should have greater flexibility than a fixed rate approach. It should also reduce the uncertainty in prices compared to a tendered approach with a limited number of providers. Under this scheme, a fixed minimum regulated rate for each type of required reserve will be applicable. The TSOs would also be able to increase these rates with discretionary variable amounts depending on system requirements and market participants' availability (for example, night and daytime variations). This would be subject to certain regulated maximum caps which may apply on the rates and/or total annual expenditure. This fixed and variable rates scheme will allow the TSOs to increase or decrease payments based on the provision of reserve from the market participants and the specific short-term system requirements. Therefore this scheme will take into account the characteristics of the capacity already made available to the TSOs due to the CPM signalling.

In addition, as a complement to the above only, the TSOs will be also allowed to enter into contracts with market participants for reserve to take into account longer-term system requirements and facilitate investment in certain types of plant and equipment as system requirements evolve over time (for example, wind integration and plant retirements).

Penalties will also be applicable to participants which, having received a reserve payment, fail to deliver the required level of performance. These regulated penalties will be proportionate to the payments received and will be used to reduce the funding needs of operating reserve from general customers.

As already indicated in an earlier decision by the RAs, reserve costs will be socialised amongst consumers. New generating plant and interconnectors may be subject to a reserve

[1] [AIP-SEM-07-447] "Proposed System Operations Services' Payments & Charges in SEM".

[2] The SEM Committee is established in Ireland and Northern Ireland by virtue of section 8A of the Electricity Regulation Act 1999 and Article 6 (1) of the Electricity (Single Wholesale Market) (Northern Ireland) Order 2007 respectively. The SEM Committee is a Committee of both CER and NIAUR (together the Regulatory Authorities) that, on behalf of the Regulatory Authorities, takes any decision as to the exercise of a relevant function of CER or NIAUR in relation to an SEM matter.

causation charge depending on their size and impact on system costs as determined by the TSOs and approved by the RAs.

### 1.3 Reactive Power

The SEM Committee has decided to introduce a harmonised arrangement for the procurement of reactive power based on fixed and variable rates which is similar to the one used in reserve and CPM. Accordingly it will comprise a fixed payment component and, where appropriate, and a variable payment component with penalties for underperformance.

The TSOs will be allowed to enter into long-term contracts with market participants for reactive power in order to take into account longer-term system requirements.

It is intended that reactive power costs will borne by the TSOs and will act as network investment signals. The total costs will be socialised and subject to regulated caps.

### 1.4 Black Start

Black start facilities will be procured under negotiated long-term contracts with the TSOs, to be ultimately approved by the RAs and instigated by the TSOs' request for additional Black start plant. These contracts will be established either following a tender process or via a direct award (for example when a new plant connects to the system). In this latter case the TSOs will ensure that the detailed arrangements to approach a candidate provider are transparent and non-discriminatory.

The cost of Black start plants will be spread amongst all consumers as they are of benefit to all consumers in the SEM.

### 1.5 Generator Performance

The SEM Committee has decided to include as part of the harmonised AS arrangements a generator performance incentive scheme that will penalise generators for underperformance with respect to the Ireland/NI Grid Codes, similar to the current arrangements in NI. Such incentive scheme will be a practical arrangement to ensure that the generator performance specified in the connection agreement is reasonably maintained following commissioning. The TSOs will publish detailed proposals during Q3 2008, as part of the next round of consultation on AS, and the SEM Committee will publish a decision during Q4 as part of the final decision on AS.

### 1.6 Trip and redeclaration charges

This issue can be treated either through modifications of existing market settlement arrangements or via dedicated arrangements, and the RAs consider it appropriate that the merits of each alternative is examined in detail. The SEM Committee has accordingly instructed the TSOs to carry out this review and make proposals in the next round of consultation on AS in Q3 2008. A final decision on this will be included by the SEM Committee in the Q4 decision on AS.

### 1.7 Other issues

These issues refer to dual fuel, multi-mode operation and environmental constraints. The TSOs could make payments on a "need basis" for any costs that service providers may incur under those infrequent events which, at this stage, do not seem to warrant the extensive changes to the systems in the TSC or other specialist systems. The SEM Committee has instructed the TSOs to review these issues and make proposals in the next round of consultation on AS in Q3, for decision by the SEM Committee in Q4. If any if these issues are deemed to be more urgent, they will be examined beforehand.

### 1.8 TSOs Incentivisation Scheme

The SEM Committee considers that a TSO incentivisation scheme is an important element of the above policies as the TSOs have some discretion in the procurement and payments of AS. It is also considered appropriate that, if the customer receives a benefit through actions of the TSOs, some of the benefits are used to reward the TSOs for their efficiency and performance, in order to incentivise this behaviour.

The SEM Committee has decided to include a performance review of each TSO with respect to AS. This will be undertaken by the relevant RA on an annual or multi-annual basis consistent with the regulatory revenue/price control in place for the TSO and any other incentives that may be applicable. The precise scope and arrangements will be covered in a subsequent review by the TSOs and RAs.

## 2 Introduction and Background

At present a number of payments and charges are paid/levied outside the main energy markets by the Transmission System Operators (TSOs). Most of these charges are related to Ancillary Services (AS) which are services necessary for the secure operation and restoration of the electricity system. The structure, treatment and arrangements of these charges are different between Ireland and Northern Ireland (NI). However in all cases these costs are recovered from demand customers, through the Transmission Use of System (TUoS) charges in Ireland and the System Support Services (SSS) levy in NI. These charges are not included in the Trading and Settlement Code (TSC) of the all-Island Single Electricity Market (SEM).

As system operations will continue to be procured on a jurisdictional basis, current mechanisms are suitable for the provision of AS for the time being. This was consulted on and all respondents were in agreement with this approach. However it is desirable to move towards a harmonised basis for the long-run for a number of reasons (which are discussed in the consultation paper referenced below). In September 2006 the Regulatory Authorities (RAs) approved[3] the continuation of separate commercial arrangements for AS and related charges within each jurisdiction for "Day 1" of the SEM - the "go-live" date, 1st November 2007 - pending a review of harmonised all-island arrangements for the longer-run.

As part of this review process, in August 2007 the RAs published a consultation paper[4] by the TSOs. This set out the harmonised all-island policy options for AS and other system operations related payments/charges, for implementation at some stage post the SEM's "go-live" date. The RAs have reviewed the comments received to this consultation paper, to which a total of 12 responses were received. The SEM Committee[5] has determined that this is a SEM Committee matter within the meaning of the legislation and has made decisions on the future treatment of harmonised AS and related charges across the island in the SEM. These decisions are presented in this high-level decision paper.

## 3 Scope and Structure of Paper

### 3.1 Scope of Paper

The main objective of this paper is to present the SEM Committee's decisions on the broad harmonised all-island policy principles for AS and related charges that will be applicable in the future in the SEM. For clarity, the existing jurisdictional AS arrangements will continue until the implementation stage of the harmonised arrangements is complete and this is not expected before the second quarter of 2009.

This paper focuses then on establishing the high level principles for the harmonised AS arrangements under the SEM and its remuneration. Further details on these AS policy principles, including the timeline for their implementation and proposed initial AS values/rates, will be the subject of industry workshops to be hosted by the TSOs in Quarter (Q) 2 of this year. This will be followed by a detailed consultation paper by the TSOs in Q3 and a decision by the SEM Committee in Q4 - see section 13 of this paper for information. Some of the "minded" views in this paper may also be further refined in the next consultation paper, following a subsequent detailed review and impact assessment.

[3] [AIP-SEM-160-06] "Day 1 Decision for System Support Services in NI and Ancillary services, Short notice redeclarations.

[4] [AIP-SEM-07-447] "Proposed System Operations Services' Payments & Charges in SEM"

[5] The SEM Committee is established in Ireland and Northern Ireland by virtue of section 8A of the Electricity Regulation Act 1999 and Article 6 (1) of the Electricity (Single Wholesale Market) (Northern Ireland) Order 2007 respectively. The SEM Committee is a Committee of both CER and NIAUR (together the Regulatory Authorities) that, on behalf of the Regulatory Authorities, takes any decision as to the exercise of a relevant function of CER or NIAUR in relation to an SEM matter.

### 3.2 Structure of Paper

This paper should be read in conjunction with the earlier TSOs' AS consultation paper[4] and covers the following issues:

- Unbundling of Ancillary Services
- Operating Reserve
- Reactive Power
- Black start
- Generator performance
- Trip and redeclaration charges
- Other charges and incentives

For each of the above a brief summary of the TSOs' proposals as set out in their consultation paper is provided, followed by an overview of the responses from commentators. A commentary by the RAs on the issues raised and other related matters is then generally provided. Taking into account the views of respondents to the consultation, this is then followed by a decision by the SEM Committee on the general policy principles to be implemented at some stage in the SEM.

A summary of the AS policy decisions is then provided in section 12 of this paper and a programme of the next steps is provided in section 13.

## 4 Unbundling

In NI AS payments are all bundled into a single identical payment (per MWhr) to all generators whereas in Ireland each AS is separately remunerated.

### 4.1 Summary of TSOs' Views

The TSOs recommended the unbundling of services. They believe that it would increase transparency and efficient use of capabilities and promote competition.

### 4.2 Summary of Respondents' Views

All of the respondents who offered a view on the unbundling proposals were supportive of this recommendation.

### 4.3 SEM Committee's Policy Decision

The SEM Committee concurs with the views of the TSOs and commentators. It believes that the unbundling of services will increase transparency and accountability, improve competition and also ensure greater flexibility for any other services that the TSOs may need to procure in the future. It is believed that these benefits will outweigh the possibly increased administration and management costs of unbundled arrangements compared with the simpler bundled services arrangement.

Consistent with this decision, the remainder of this paper will examine separately each of the key services covered by the TSOs' proposals.

### 4.4 Eligibility

The SEM Committee agrees with the views of the TSOs and others that, provided the requirements for an AS required for system operation are met, providers should not be discriminated between based on the nature of the technology used to deliver it. However it is possible that the value of a service may be different if provided by alternative technologies,

due to their technical characteristics only, and as such it may attract different payments from the TSOs.

### 4.5 Remuneration of AS

Regarding the remuneration of AS, the SEM Committee view is that in general it would be inappropriate to base payments on their system value as, being essential for the operation of the system, their value would almost invariably be disproportionate to the costs involved in their provision. Remuneration for each AS is discussed separately below.

## 5 Operating Reserve

Operating Reserve is the capacity required to restore significant unplanned short term generation shortfalls caused typically by generation and/or transmission outages or demand forecasting errors.

### 5.1 Background

*5.1.1 Harmonised Definitions of Reserve*

The SEM "go-live" version of the Ireland and NI Grid Codes more formally defines Operating Reserve (OR) as the additional MW output provided from generation plant, or reduction in customer demand which must be realisable in real time operation to contain and correct any potential Transmission System Frequency deviation to an acceptable level[6]. The Grid Codes define three types of OR depending on the timescale of its provision namely, Primary, Secondary and Tertiary (with two subtypes).

Operating Reserve is part of the Operating Margin which is the amount of reserve (provided by additional Generation or Demand reduction measures) available above that required to meet the expected System Demand. Prudent utility practice requires that a continuum of Operating Margin is provided to adequately limit, and then correct, the potential frequency deviation which may occur due to a Generation/Demand imbalance. In order to avoid any confusion it is worth clarifying that although the TSOs consultation document only made reference to OR, it should have referred more generally to what in the Grid Codes is defined as Operating Margin of which OR is the most important component. The rest of this document will follow the same convention used in the TSOs consultation document unless stated otherwise.

Although considerable work has been undertaken to harmonise the Grid Codes for the SEM, not all the definitions of Reserve and their subclasses are fully consistent between the EirGrid and NIE Grid Codes for SEM "go-live". Further work will be required to fully harmonise these definitions between both jurisdictions.

*5.1.2 Demand Side Management*

As indicated above in the definition of Operating Reserve, Demand can also be a source of reserve in addition to the reserve provided by Generation sources. Current arrangements for the provision of reserve from demand schemes differ between Ireland and NI and comprise a number of market and non-market Demand Side Management (DSM) schemes.

Demand side units (DSUs) participate actively in the energy market and will also be able to offer AS services to the TSOs.

The most relevant of the non-market DSM schemes to the scope of this paper are the Interruptible Load (IL) in NI and the Short Term Active Response (STAR) in Ireland. Both of

[6] EirGrid Grid Code Version 3, Sept 28th 2007. A similar, although not identical definition, can be found in the NIE Grid Code. Each TSOs is responsible for the security of the system in their jurisdiction.

these schemes are automatic load tripping initiated following a frequency dip beyond a certain threshold. These schemes contribute towards the Operating Reserve requirement and, although grouped with other DSM schemes, are really part of the SEM AS Operating Reserve.

The arrangements applicable for "Day 1" or initial functioning period of the SEM were the subject of an earlier consultation[7] by the TSOs and decision by the RAs[8] in line with the TSOs proposals. A comprehensive description of the various schemes and tariffs was provided in the TSOs paper approved by the RAs. The TSOs DSM paper concluded that *"while in the medium to long-term, price signals in the SEM should provide incentives to encourage demand side response, in the interim non-market DSM schemes will continue to play an important role in ensuring that security of supply is maintained. A decision on the longer term arrangements for non-market DSM schemes should be made 18 months after the opening of the SEM to allow sufficient time to determine the demand side bidding and system security behaviour over two winter periods in the SEM"*.

The RAs have not changed their views on this issue. It is not envisaged that any of the present DSM schemes will be eligible for reserve payments once the AS are harmonised other than the IL/STAR schemes which, if continued in the future, will receive an AS payment in lieu of existing payments. In any case future arrangements will ensure that any of the existing schemes do not attract a "double payment" from the AS.

### 5.2 Summary of TSOs' Views

The TSOs indicated a preference for a regulated rate approach unbundled for each category of reserve over a tender approach (annual, daily). The TSOs preference was justified on the number of limited providers of reserve in the market, and the possibility that a tendered approach may not deliver the required level of reserve.

However they also indicated that as the SEM develops and wind is further integrated on the system, other approaches may become suitable and recommended closely monitoring and regularly reviewing this approach.

In relation to cost recovery, the TSOs did not indicate any strong preference although they commented that socialising costs would result in the lowest implementation and administration costs.

### 5.3 Summary of Respondents' Views

A large majority of respondents indicated their agreement with the TSOs proposals for a *regulated rate approach* although a few reserved judgement until details about the scheme are provided. One respondent indicated a preference for an *annual tender*. Another respondent indicated a preference for a mixed approach. A respondent suggested the possibility of either continuing with regulated payments but applying different rates to new and existing plant, or to increase the capacity payments to those providing reserve.

A respondent indicated concern that the link between Capacity Payments under the SEM and AS payments (reserve) was not fully considered and that the provision of capacity and AS were linked.

[7] [AIP-102-06] "SONI/EirGrid Review of Demand Side Management Measures", Consultation Paper, October 2006.
[8] [AIP-228-06] "RA Decision on SONI/Eirgrid Review of Demand Side Management Measures", December 2006.

A majority of respondents indicated a preference to continue spreading the costs of reserve amongst consumers with three respondents expressing a preference for a *causer-pays* mechanism.

## 5.4 RAs' Comments

### *5.4.1 General*

The efficiency and transparency of payment for reserve will become increasingly important as the SEM continues to develop, particularly as wind penetration continues to increase. The RAs are therefore keen that a harmonised approach is developed which will allow the system operators to meet their requirements in as economical manner as possible and at best value to customers.

### *5.4.2 Grid Code Requirements*

The provision of frequency response, i.e. automatic change in generation output to arrest frequency variations, is mandatory for generators under the harmonised Ireland and NI Grid Codes in the SEM. All generators participating in the SEM are required to provide a minimum level of frequency response.

### *5.4.3 SEM Grid Code Harmonisation*

Harmonised reserve procurement and payments will need to operate under a consistent reserve definition framework in the Ireland and NI Grid Codes. The definitions of reserve in the latest drafts of the EirGrid and SONI Grid Codes[9] will therefore need to be reviewed in some cases.

The definitions of the various types of reserve should also allow recognition of the benefits of all types of plant and providers of each type of reserve required by the TSOs. In this respect the RAs notice for example, and some commentators also highlighted in response to the August consultation paper, that the current definitions of primary reserve in the EirGrid Grid Code, effectively quantifies unit response measuring output changes at the post-contingency frequency nadir. Such definition may prevent the recognition and rewarding of fast acting plant which may be beneficial to the system.

The RAs consider that resolving the above issues is outside the scope of this policy document and that the harmonisation of the reserve definitions in the EirGrid and NIE Grid Codes should be evaluated and agreed by the TSOs and their proposals be submitted for approval prior to the implementation of the new harmonised arrangements presented later.

### *5.4.4 Relationship between CPM and Operating Reserve*

Some respondents to the August Consultation Paper have raised issues relating to the relationship between the Capacity Payment Mechanism (CPM) and Reserve. In order to clarify the relationship the RAs consider it necessary to briefly review the need for capacity payment in a market with the characteristics of the SEM. The detailed economic rationale of the CPM was explained in AIP/SEM/19/05[10].

Reserve payments serve the purpose of ensuring that sufficient plants are available in the right locations, capable of providing the response required by the TSO. The issues relating to the design of the CPM (including how it interacts with the provision of AS) were consulted on previously by the RAs during the development of the CPM .The CPM does not, and was not designed to, ensure that generators offer sufficient reserve within certain geographical boundaries or to particular technical specifications.

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[9] SONI SEM Grid Code dated 22/10/2007 and EirGrid Grid Code Version 3.0. Documents available from SONI and EirGrid web sites.

[10] "Capacity Payment Mechanism Options Paper", 20th May 2005, [AIP/SEM/19/05].

It has been suggested that generators will be unable to respond to the short-term signals provided by the CPM but the RAs have already expressed its disagreement with this view[11].

The TSOs and RAs undertook a study[11] to examine the incentive to withdraw capacity in order to maximise the capacity payment to the remaining generation under the CPM signalling. The study concluded that, although it was possible at certain times to profit from such strategy, the best overall strategy was to offer all the capacity to the TSOs. It was concluded that the variable payment system built in the design of the SEM CPM is designed to encourage capacity into the market and is robust to gaming by portfolio generators. A similar conclusion would be expected in case of reserve capacity being incentivised via variable payments.

However the CPM has its limitations as a capacity incentivisation scheme as it does not recognise that, although it may attract sufficient reserve capacity to the TSOs to secure the system from a demand-generation balance perspective, the available generation may not have the required technical response across the various reserve categories to secure the system. Furthermore, network constraints may require that sufficient reserve is offered within certain geographical boundaries. Hence reserve payments are needed to ensure that sufficient plants in the right locations, capable of providing the response required by the TSO, are available.

*5.4.5 Procurement*

The RAs concur with the views that a *tendering* approach may not necessarily provide sufficient benefits to justify its implementation costs in the short term, and the market may not necessarily have a sufficient number of providers to ensure competition in the provision of reserve. However the RAs also consider that the establishment of a *fixed rate* approach may not provide sufficient market incentives to promote competition between reserve providers, recognising that the reserve requirements (and associated costs) vary during each day. For example, during the night some plant may remain connected to avoid restart costs and the amount of reserve capacity then may exceed the system requirements without any TSO intervention; however extra reserve generation capacity may be required during the day peak. The reserve provider may also not provide sufficient flexibility to the TSOs to cope with potential situations in securing the operation of the system.

*5.4.6 Cost Recovery*

The RAs already indicated in their decision document "Capacity Payment Mechanism and Reserve Charging"[12], which followed a market consultation, that a "causer-pays" mechanism remains an economically correct solution for the allocation of reserve costs. However, for reasons of fairness and stability, it was decided in this document that reserve costs in the SEM will be socialised as is currently the case in both jurisdictions.

One of the added advantages of a *causer-pays* approach for reserve is that it serves also to signal the appropriate maximum unit size for the system as developers balance the efficiency gains obtained from larger unit sizes against the cost of reserve to secure the system in case of its unplanned outage.

The RAs considered this issue and decided in AIP/SEM/53/05 that whenever a new plant (and potentially an interconnector) applies for connection to the system, a study will be conducted by the TSOs to determine whether the reserve requirement for the system as a whole has increased as a result. The decision document clarified that reserve requirement for the system might increase, for example, in the case of a very large plant, or in the case of

[11] "Capacity Payment Factors. Decisions Paper", December 2006 [AIP-SEM-231-06].
[12] "Capacity Payment Mechanism and Reserve Charging. High Level Decision Paper" 15th July 2005, [AIP/SEM/53/05].

plant where production is highly correlated with the production of other plant (e.g. wind). If it is shown that the connection of new plant will increase the reserve requirement for the system as a whole, the decision document indicated that new plant may be assessed as having a reserve causation charge upon connection.

In view of the TSOs proposals and responses from commentators to their consultation document, the RAs consider the above decisions in AIP/SEM/53/05 as appropriate and that they are in agreement with the majority of respondents' views. However the RAs consider it necessary to make some clarifications and minor modifications to the above decision because it does not provide a way of recognising the benefits that larger more efficient plants or interconnectors may bring to the system in terms of reduced energy prices. Furthermore it penalises wind generation (compared with non-wind) by requiring a TSO reserve study for effectively every new wind farm, while it also discriminates against wind by making the newest wind generator on the system responsible for all wind-related reserve costs. This could also be interpreted as contradicting the principle of socialisation of reserve costs. Finally, some clarifications are required on the "reserve causation charge" as a single payment upon connection would not seem to be appropriate to cover for additional reserve costs that would be incurred on an annual basis. The modifications and clarifications to the above decisions are provided in the next section.

### 5.5 SEM Committee's Policy Decision

In view of all the above, the SEM Committee has decided to introduce a reserve remuneration scheme should have greater flexibility than a fixed rate approach. It should also reduce the uncertainty in prices compared to a tendered approach with a limited number of providers..

The SEM Committee is minded that, under this scheme, a fixed minimum regulated rate for each type of required reserve would be applicable. The TSOs would also be able to increase these rates with variable amounts depending on system requirements and market participants' availability (e.g. night and daytime variations). This would be subject to regulated caps which may apply on the rates and/or total annual expenditure on each service. The envisaged hybrid fixed/variable rate scheme will allow the TSOs to increase or decrease payments based on the provision of reserve from the market participants and the specific short-term system requirements. This scheme will therefore take into account the characteristics of the capacity already made available to the TSOs due to the CPM signalling as discussed above. Similarly to the case of the CPM variable payment it is considered that the gaming options with the variable reserve payments[13] would not be a cause for concern.

In addition, as a complement to the above only, the SEM Committee has decided that the TSOs will be also allowed to enter into contracts with market participants for reserve to take into account longer-term system requirements and facilitate investment in certain types of plant and equipment as system requirements evolve over time (for example, wind integration and plant retirements).

Penalties will also be applicable to participants which, having received a reserve payment, fail to deliver the required level of performance. These regulated penalties will be proportionate with the payments received and will be used to reduce the funding needs of reserve payments, and AS in general, from general customers.

[13] The TSOs and RAs undertook a study (reported in "Capacity Payment Factors. Decisions Paper", December 2006 [AIP-SEM-231-06]) to examine the incentive to withdraw capacity in order to maximise the capacity payment to the remaining generation under the CPM signalling. The study concluded that, although it was possible at certain times to profit from such strategy, the best overall strategy was to offer all the capacity to the TSOs. It was concluded that the variable payment system built in the design of the SEM CPM is designed to encourage capacity into the market and is robust to gaming by portfolio generators.

The efficiency of the TSOs in determining the required level of reserve and the payment scheme would be evaluated as part of a larger TSO incentivisation scheme covered in more detail later in this document.

Regarding the DSM schemes, the RAs have already indicated their decision to make a review of the non-market DSM schemes 18 months after the opening of the SEM, to allow sufficient time to determine the demand side bidding and system security behaviour over two winter periods in the SEM. It is not envisaged that any of the present DSM schemes will be eligible for reserve payments once the AS are harmonised, other than the IL/STAR schemes which, if continued in the future, will receive an AS payment in lieu of existing payments under existing arrangements.

As already decided in AIP/SEM/53/05 reserve costs will be socialised amongst consumers. Regarding the treatment of new connections of large plants or interconnectors, also decided in that decision document (as discussed above), the TSOs should only have to undertake a system reserve study when a new plant (or interconnector) applies for connection if a credible outage of the new plant would cause a capacity shortfall greater than the largest credible outage of the largest plant already existing in the market. Furthermore a reserve causation charge may only be applied to the new plant if the increased reserve cost, estimated on an annual basis, outweighs the benefits from the probable reduction in marginal prices due to the expected improved efficiency of the new plant and the displacement of less efficient units in the dispatch. The TSOs will have to undertake a market study with and without the new plant to forecast the changes in the market marginal costs. Finally the reserve causation charge, if applicable, should be applied on an annual basis and be commensurate with the system costs of the new plant calculated by the TSOs.

These policy proposals for reserve signify that the TSOs, in accordance to their position and role in securing the main energy market, will take greater responsibility for procuring, encouraging and paying for reserve, subject to the RAs' supervision and regular review as part of a TSO incentivisation scheme.

# 6 Reactive Power

Reactive Power is the result of the cyclical energy exchange between the electric and magnetic fields of the plant and equipment connected to the network. Reactive Power is essential in controlling voltages across the network and maintaining an adequate voltage profile is required for the stability of the power system. Generators and certain network equipment are the main sources of reactive power. The provision of reactive power is a mandatory service for generators under the Ireland and NI Grid Codes.

## 6.1 Summary of TSOs' Views

The TSOs indicated their preference for a combination of a regulated fixed payments system and investment in network developments to provide voltage support capability.

The TSOs did not indicate a strong preference regarding charging for the provision of Ancillary Services although they noted the merits of socialisation of costs in terms of low administration costs.

## 6.2 Summary of Respondents' Views

A majority of respondents expressed a preference for a regulated "fixed rate" approach

Regarding the charging of reactive power costs, two respondents indicated a preference for a "causer pays" approach with the majority favouring a continuation of the spread of costs amongst consumers.

### 6.3 RAs' Comments

Reactive power cannot be transmitted over long distances, i.e. it must be provided close to the area where there are voltage problems. Therefore, it is considered that a tender approach for the provision of reactive power would not be appropriate as generally there would only be a very limited number of providers in any one area able to satisfy the technical system requirement.

For generators the actual cost of providing reactive power for a committed unit is very small as the excitation system involved is required for the generation of electricity. They arise from marginal increases in losses in the exciter and stator of the alternator and from small and difficult-to- quantify increases in maintenance and plant life costs.

The need for reactive support, other than that associated with its continuous control across the network as load changes, arises mainly because of weaknesses in the network. The cost of an alternative network reinforcement that would overcome the need for voltage support from a generator could vary significantly depending on local network circumstances. It is considered that a simple fixed payment for reactive power would not adequately promote consideration of the alternative of network reinforcement.

### 6.4 SEM Committee's Policy Decision

The SEM Committee has decided to introduce a harmonised arrangement for reactive power based on fixed and variable rates similar to the ones used in reserve and CPM. Penalties will be applicable for underperformance.

The fixed component could be related, for example, to the annual energy losses in the provision of reactive power under typical operating conditions, while the variable component would act as a incentive to encourage availability, if necessary, from certain generators and/or geographical areas.

Similar to the case of operating reserve, and as a complement to the above only, the SEM Committee has decided that the TSOs will be allowed to enter into contracts with market participants for reactive power, in order to take into account longer-term system requirements.

Reactive power costs would ultimately be borne by all consumers and the total costs would be subject to regulated caps.

## 7 Black Start

Black start plant can start without an external power supply and be used to energise network elements and provide power to start other plant in the system following a blackout.

### 7.1 Summary of TSOs' Views

The TSOs indicated their preference for a combination of a tendered approach with regulatory approved rates for existing black start units and regulatory-approved negotiated long-term contracts for new black start plant.

The TSOs proposed spreading the cost of this service amongst all consumers in proportion to their demand.

### 7.2 Summary of Respondents' Views

A strong view emerged amongst respondents supporting the TSOs proposals for negotiated long-term contracts for the procurement of black start services from new plant. However concerns were expressed about the transparency of the current procurement approaches in Ireland, and generally more details about the scheme were considered necessary.

### 7.3 SEM Committee's Policy Decision

The SEM Committee concurs with the TSOs' and respondents' views and have decided that, due to the nature of the service, black start facilities should be procured under negotiated long-term contracts with the TSOs, to be ultimately approved by the SEM Committee.

Black start contracts will cover fixed, maintenance, testing and usage costs of the black start dedicated equipment. Penalties will be applicable in the case of underperformance.

These contracts will be established either following a tender process or via a direct award (for example when a new plant connects to the system). In this latter case the TSOs will ensure that the detailed arrangements for approaching a candidate provider, which will be subject of a subsequent review (see section 13), are transparent and non-discriminatory. For the same reason it is considered appropriate to review black start contracts on a "needs basis", instigated by the TSOs' request for additional black start plant.

Any new arrangements should recognise costs in existing/committed black start facilities to ensure that any potential transitional stranded assets are not disadvantaged by the introduction of new arrangements or reinforcements in the network.

The SEM Committee considers it appropriate that the costs of black start dedicated equipment are spread amongst all consumers as they are of benefit to all consumers in the SEM.

## 8 Generator Performance Incentives

In a relatively small power system, such as the all-island SEM, it is very important for the efficient and economic operation of the system to ensure that the generators maintain the performance required in the Grid Codes.

### 8.1 Summary of TSOs' Views

Currently the only penalty measure for non-compliance with the Grid Code in Ireland is an extreme one, in which generators must maintain performance or be removed from the system via licence revocation. At present it could be argued that there are not sufficient incentives for generators to maintain Grid Code performance in Ireland, while there are only limited ones in NI. The end-consumer effectively pays for non-performance through higher constraint costs. Appropriate generator performance helps the TSOs to minimise costs.

The underlying principle for the development of additional performance incentives in Ireland is that there should be no increase in cost to the electricity consumer. The TSOs propose a generator performance incentive scheme of withholding AS payments, coupled with a penalty mechanism which will take the form of an amount charged to the unit which is a multiple of the rate paid for performance (similar to Ireland's WPRDS incentivisation penalties). The exact details would be developed during the implementation phase of this workstream.

### 8.2 Summary of Respondents' Views

Of those that commented on the issues raised, one respondent did not support the TSOs' proposals preferring a system based on rewards and penalties of neutral cost to consumers.

Another expressed concern regarding a penalty system. One commentator was supportive of charging generators the costs of their underperformance against the Grid Codes' requirements. A few commentators indicated that current derogations relate to connection requirements prior to the current Grid Codes and that they should be taken into account. Another suggested incompatibility issues between certain technologies and some Grid Code requirements.

### 8.3 RAs' Comments

The RAs concur with the TSOs' views that licence removal as a regulatory instrument, used in isolation to incentivise generators to maintain performance against Grid Code requirements, can be considered not-credible and hence ineffective. It is clear then that a less drastic incentivisation scheme is necessary to ensure that generators maintain performance and that licence revocation remains at or towards the end of measures available to be used against persistent infringements.

### 8.4 SEM Committee's Policy Decision

The SEM Committee has decided to include as part of the harmonised AS arrangements a generator performance incentive scheme that would penalise generators for underperformance with respect to the Ireland/NI Grid Codes, similar to the current arrangements in NI. It is considered that such incentive scheme would be a practical arrangement to ensure that the generator performance specified in the connection agreement is reasonably maintained following commissioning. This incentive scheme could not only cover frequency response but also other Grid Code requirements such as minimum load capabilities, minimum on-time, minimum off-time, governor droop capability, loading/deloading rates, etc. The review will also cover the treatment of derogated plant. The precise scope of the generators' characteristics to be included and arrangements will be covered in a subsequent review by the TSOs and RAs. The TSOs will publish detailed proposals during Q3 2008, as part of the next round of consultation on AS, and the SEM Committee will publish a decision during Q4 2008 as part of its decision on AS.

## 9 Trip and Redeclaration Charges

These are charges for the unscheduled outage of dispatched plant or the variation in availability of committed plant.

### 9.1 Summary of TSOs' Views

The TSOs indicated their preference for applying charges for generation trips and redeclarations which are a function of the size of generation change and rate of generation change.

### 9.2 Summary of Respondents' Views

Three respondents expressed their opposition to the application of trip and redeclaration charges under the SEM. One respondent suggested introducing a threshold (trips/year) before penalties would be applicable. A respondent indicated that, if a generator has a *Contract for Differences* for its output then the financial penalties associated with this type of contract when the TSOs re-dispatch generation are strong enough to maintain reliability.

Two respondents indicated that they considered that not only a penalty for unreliability should be applied but also a reward system should be introduced for good reliability.

### 9.3 SEM Committee's Policy Decision

A trip and redeclaration is not fundamentally different with regards to the effects on the system to an uninstructed imbalance and could be treated similarly. However in the current

Trading and Settlement Code (T&SC) the ex-post availability, and more importantly the ex-post dispatch instruction, of the unit concerned is reduced to zero and the forced outage is not counted as an uninstructed imbalance. This was deliberately done to allow the AS workstream to consider these issues without having implementation constraints from the energy market

Given that this issue can be treated either through modifications of existing market settlement arrangements, through dedicated arrangements as is currently the case in NI, or through a combination of both, the SEM Committee has decided that the merits of each alternative should be examined in detail by the TSOs in a subsequent review. The TSOs will publish detailed proposals on this during Q3 2008, as part of the next round of consultation on AS, and the SEM Committee will publish a decision during Q4 2008 as part of its decision on AS.

## 10 TSO Incentivisation

TSO incentivisation is considered generally desirable as it has the potential to reduce the overall cost to the customer. This section explains the SEM Committee's decision for the introduction of a TSOs Revenue Incentive scheme, to complement the above decisions.

### 10.1 Summary of TSOs' Views

The TSOs indicated that they consider it appropriate for them to be incentivised for efficiencies achieved in the costs of services. However they considered that AS should not be treated in isolation and that any incentive scheme developed should be developed taking into account the TSO's entire business. The TSOs also considered important that incentives are developed following experience with both the SEM and other associated payments and charges.

### 10.2 Summary of Respondents' Views

Respondents expressing a view on this issue have been supportive of introducing incentives for the TSOs.

### 10.3 SEM Committee's Policy Decision

The SEM Committee considers that a TSO incentivisation scheme is an important element of the some of the above policies as the TSOs have certain levels of discretion in the provision and payments of AS. It is also considered appropriate that, if the customer receives a benefit through actions of the TSOs, some of the benefits are used to reward the TSOs for their efficiency and performance in order to incentivise this behaviour.

The SEM Committee has decided to include a performance review of each TSO with respect to AS. This will be undertaken by the relevant RA on an annual or multi-annual basis consistent with the regulatory revenue/price control in place for the TSO and any other incentives that may be applicable. The precise scope and arrangements will be covered in a subsequent review by the TSOs and RAs.

## 11 Other Issues

A number of other issues were also raised by respondents which were not covered in either the TSOs proposals or the current version of the TSC, such as:

- Dual Fuel Capability: Some stations can operate using alternative fuels, for example gas and oil.
- Multiple configuration stations: Some stations can operate under various configurations which modify their efficiency and technical characteristics e.g. combined cycle and open cycle gas turbines.

- Environmental constraints: Environmental legislation prevents some stations from exceeding certain amount of annual emissions quota and therefore running hours.

These issues are not explicitly recognised in the TSC nor the TSOs' AS proposals. However they are part of the pre-SEM resources available to the TSOs to operate the system securely under extreme conditions which occur relatively infrequently and/or for very short periods of time.

It could the be argued that some of the above services could be included in the market and that the bidding schedules, market systems and the algorithms in the TSC could be modified to cope with all the possible station configurations, fuel types and other constraints.

It should also be recognised however that it is not necessarily possible to describe and define all of the possible services that may aid the operation of the transmission system and that there may be higher costs and complexity involved in implementing changes to the TSC than could be justified by the benefits.

### 11.1 SEM Committee's Policy Decision

The SEM Committee recognises that the TSOs should have the flexibility to avail of services that are not amenable to or do not warrant the development of market solutions but nonetheless have the potential to make a valuable contribution to system operation. Accordingly the SEM Committee is minded that the TSOs would make payments for such services on a usage basis with payment structure and levels having been approved by the RAs ahead of need.

The TSOs will make proposals in this regard to the RAs for the detailed AS consultation paper in Q3 and the SEM Committee will publish a decision during Q4 2008. If any if these issues are deemed to be more urgent, they will be examined beforehand within this workstream or elsewhere as appropriate.

## 12 Summary of Policy Decisions

The SEM Committee's decisions, as follows, are generally in line with the comments received from the stakeholders who participated in the consultation process.

### 12.1 Unbundling of Services

AS procured by the TSOs are to be unbundled to increase transparency and accountability, to improve competition and also to provide greater flexibility in the SEM. Procurement of services will be based on the ability to deliver the service required by the TSOs and should not discriminate between providers by the nature of the technology used in providing the service.

### 12.2 Operating Reserve

The SEM Committee has decided to introduce a reserve remuneration scheme which will not necessarily have the inflexibility of a fixed rate approach or the uncertainty in prices associated with a tendered approach with a limited number of providers. Under this scheme, a fixed minimum regulated rate for each type of required reserve will be applicable. The TSOs would also be able to increase these rates with variable amounts depending on system requirements and market participants' availability (for example, night and daytime variations). This would be subject to regulated caps which may apply on the rates and/or total annual expenditure. This fixed plus variable rates scheme will allow the TSOs to increase or decrease payments based on the provision of reserve from the market participants and the specific short-term system requirements.

In addition, as a complement to the above only, the TSOs will be also allowed to enter into contracts with market participants for reserve to take into account longer-term system requirements and facilitate investment in certain types of plant and equipment as system requirements evolve over time (for example. wind integration and plant retirements).

Penalties will also be applicable to participants who, having received a reserve payment, fail to deliver the required level of performance. These regulated penalties will be proportionate to the payments received and will be used to reduce the funding needs of operating reserve from general customers.

As already indicated in an earlier decision by the RAs, reserve costs will be socialised amongst consumers. New generating plant and interconnectors may be subject to a reserve causation charge depending on their size and impact on system costs as determined by the TSOs and approved by the RAs.

### 12.3 Reactive Power

The SEM Committee has decided to introduce a harmonised arrangement for reactive power based on fixed and variable rates which is similar to the one used in reserve and CPM in that it comprises a fixed payment component and a discretionary variable payment component. Penalties will also be applicable for underperformance.

The TSOs will be allowed to enter into long-term contracts with market participants for reactive power in order to take into account longer-term system requirements.

Reactive power costs would ultimately be borne by all consumers and the total costs would be subject to regulated caps.

### 12.4 Black Start

Black start facilities should be procured under negotiated long-term contracts, to be ultimately approved by the SEM Committee and instigated by the TSOs' request for additional black start plant. These contracts will be established either following a tender process or via a direct award (for example when a new plant connects to the system). In this latter case the TSOs will ensure that the detailed arrangements to approach a candidate provider are transparent and non-discriminatory.

Black start contracts will cover fixed, maintenance, testing and usage costs of the black start dedicated plant. Penalties will be applicable in the case of underperformance. Any new arrangements will recognise costs in existing/committed black start facilities to ensure that any potential transitional stranded assets are not disadvantaged by the introduction of new arrangements.

The costs of black start plants will be spread amongst all consumers as they are of benefit to all consumers in the SEM.

### 12.5 Generator Performance

The SEM Committee has decided to include as part of the harmonised AS arrangements a generator performance incentive scheme that will penalise generators for Grid Code underperformance, similar to the current arrangements in NI. Such incentive scheme will be a practical arrangement to ensure that the generator performance specified in the connection agreement is reasonably maintained following commissioning. The review will also cover the treatment of derogated plant. The precise scope of the generators' characteristics to be included and arrangements will be covered in a subsequent review by the TSOs and RAs. The TSOs will publish detailed proposals during Q3 2008, as part of the next round of

consultation on AS, and the SEM Committee will publish a decision during Q4 as part of the final decision on AS.

### 12.6 Trip and redeclaration charges

The SEM Committee has instructed the TSOs to carry out a review of this and make proposals in the next round of consultation on AS in Q3 2008. A final decision on this will be included by the SEM Committee in the Q4 decision on AS.

### 12.7 Other issues

The SEM Committee has instructed the TSOs to make proposals to the RAs on issues such as dual fuel, multiple station configurations and environmental constraints on operation. Proposals will be included in the next round of consultation on AS in Q3, for decision by the SEM Committee in Q4. If any if these issues are deemed to be more urgent, they will be examined beforehand.

### 12.8 TSOs Incentivisation Scheme

The SEM Committee has decided to include a performance review of each TSO with respect to AS. This will be undertaken by the relevant RA on an annual or multi-annual basis consistent with the regulatory revenue/price control in place for the TSO and any other incentives that may be applicable. The precise scope and arrangements will be covered in a subsequent review by the TSOs and RAs.

## 13 Next steps

Following this decision on the high level principles for the procurement of AS under the SEM, the following table indicates the timeline for the development of detailed arrangements and implementation. This programme is preliminary and may be later modified depending on the outcome of the assessment by the TSOs to be carried out during Q1 2008. The programme involves the publication by the TSOs of a detailed consultation paper on AS in Q3, to include issues such as the timeline for implementation of the policies, proposed initial AS values/charges and other items referred to in this paper such as generator performance incentives. An SEM Committee decision paper is then expected in Q4 of this year followed by implementation during 2009.

| Timeline | Activity Milestone |
|---|---|
| Q1 2008 | TSOs study SEM Committee policy decisions: examine options, identify changes to systems and associated costs/timeline for implementation, and develop proposals for AS rates/values. |
| Early Q2 2008 | TSOs host workshops and otherwise consult with industry on detailed AS proposals |
| Q2 2008 | TSOs finalise detailed proposals following workshops and discuss with RAs |
| Q3 2008 | TSOs publish detailed consultation paper on above matters, including proposals on generator performance, trip/re-declaration charges and other issues |
| Q4 2008 | TSOs submit comments to paper and final detailed AS proposals to the SEM Committee for approval |
| Q4 2008 | SEM Committee publishes detailed decision paper on AS |
| Q4 2008 - Q2 2009 | TSOs implement detailed decisions followed by “go-live” |