



# **Integrated Single Electricity Market (I-SEM)**

**Offers in the I-SEM Balancing Market**

**Consultation Paper**

**SEM-16-059**

**7<sup>th</sup> October 2016**

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## 1 EXECUTIVE SUMMARY

The current policy underpinning the market power mitigation strategy in the Single Electricity Market (SEM) is partially based on bidding principles for generators, which require generators to bid cost reflectively. As part of the implementation of the bidding framework, the Regulatory Authorities (RAs) published in 2007 a Bidding Code of Practice (BCOP) (AIP-SEM-07-430), which was subsequently updated by the RAs, with the latest version of the BCOP published in 2014 (SEM-14-019).

The Market Power Mitigation Decision Paper (SEM-16-024) confirmed that the wording of the existing bidding principles will be considered by the SEM Committee prior to the introduction of a licence condition, which will be required to facilitate compliance with the principles. Additionally, the Market Power Mitigation Decision Paper confirmed, inter-alia, that:

- no ex-ante bidding controls will be applied to offers submitted by market participants in the Day Ahead Market (DAM) and the Intra-Day Market (IDM);
- energy actions in the Balancing Market will have no explicit ex-ante offer controls, but the SEM Committee will, by developing a framework, implement ex-ante offer controls either on individual participants or across the wider market if observed behaviour is deemed to warrant this; and
- non-energy actions of units operating in the Balancing Market will be settled based on 3-part offers, which will have an explicit ex-ante offer control applied to them.

Consequently, the SEMC has prepared this consultation paper “Offers in the I-SEM Balancing Market”. Initially, this consultation paper considers an option of updating the existing BCOP to reflect changes under I-SEM and to capture experience/learnings from market monitoring in SEM (identified as Option 1 - Offer Principles). Under Option 1, it is proposed that content regarding bidding controls, which is contained within the existing electricity generation licence will also be incorporated into a revised code.

Additionally, this consultation paper considers an option of introducing explicit Offer Limits into the I-SEM regulatory framework, as an alternative approach to controlling generator commercial behaviour (identified as Option 2 - Offer Limits within this consultation paper).

The options outlined in the following paper will determine the offer arrangements that will be applied to actions deemed to be non-energy in the I-SEM Balancing Market only.

Whilst the proposed framework for imposition of offer controls is intended to be restricted to non-energy actions in the I-SEM Balancing Market, in the event that behaviour is deemed by the SEM Committee to be unacceptable, the SEM Committee will be prepared to use the framework to implement ex-ante offer controls either on individual or across all participants if observed behaviour is deemed to warrant this.

The SEM Committee invites responses from stakeholders regarding offer control options identified within this consultation paper. Additionally, the SEM Committee notes that separate to this consultation paper on offer controls in the I-SEM, the RAs will be issuing a consultation on modifications to licences issued by the RAs, including generation licences. Depending on the outcome of the present consultation, the RAs may use that consultation to bring forward the licence changes, which will underpin compliance with any revised offer controls that are determined by the SEM Committee<sup>1</sup>.

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<sup>1</sup> For clarity the draft licence conditions are indicative of likely licence conditions only, the actual licence condition will be subject to further consultation at a later date.

## 2 INTRODUCTION

### 2.1 BACKGROUND

In preparation for I-SEM Go-Live (i.e. October 2017), the SEM Committee reviewed current market power arrangements in the Single Electricity Market (SEM). As part of this review, the SEM Committee published an I-SEM Market Power Mitigation Discussion Paper (SEM-15-031), Market Power Mitigation Consultation Paper (SEM-15-094) and a Market Power Mitigation Decision Paper (SEM-16-024).

Within the I-SEM Market Power Mitigation Decision Paper (the “Decision Paper”), the SEM Committee outlined the framework (e.g. controls on offers, Forward Contracting Obligations, ring fencing, REMIT) that will be applied to mitigate wider market power in the energy markets that make up the I-SEM.

With reference to controls on offers submitted, the Decision Paper confirmed that no ex-ante controls will be applied to offers submitted by market participants in the Day Ahead Market (DAM) and the Intra-Day Market (IDM). However, in relation to the Balancing Market<sup>2</sup>, the Decision Paper confirmed that:

- energy actions<sup>3</sup> in the Balancing Market will have no explicit ex-ante offer controls, but the SEM Committee will, by developing a framework, implement ex-ante offer controls either on individual participants or across the wider market if observed behaviour is deemed to warrant this; and
- non-energy<sup>4</sup> actions of units operating in the Balancing Market will be settled based on 3-part offers, which will have an explicit ex-ante offer control applied to them.

The SEM Committee acknowledged within the Decision Paper (Section 8.21.1) that application of an offer principle to the 3 part offers for non-energy actions in the Balancing Market, will need to offer clarity (as market participants need to form an

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<sup>2</sup> The Electricity Balancing Network Code (EBNC) defines the Balancing Market as the market for balancing capacity and energy that is utilised post 'Balancing Energy Gate Closure Time' (one hour ahead of the delivery hour). Prior to the 'Balancing Energy Gate Closure Time' the Transmission System Operators (TSOs) will schedule and dispatch participants to manage system security.

<sup>3</sup> The I-SEM Energy Trading Arrangements Detailed Design Consultation Paper ([SEM-15-026](#)) indicated that energy actions can be broadly considered as actions taken by the TSOs to address an overall imbalance between supply and demand across the settlement period.

<sup>4</sup> The I-SEM Energy Trading Arrangements Detailed Design Consultation Paper ([SEM-15-026](#)) indicated that non-energy actions can be considered as actions that are taken by the TSOs to address system issues that would still exist even if the market had perfectly balanced. These non-energy requirements include Reserves, Dynamics (Inertia, RoCoF, SNSP), Voltage support and thermal transmission constraints.

expectation of what is considered reasonable behaviour) and flexibility where appropriate. Additionally, within the Decision Paper (Section 8.21.2), the SEM Committee confirmed that the detailed wording of these offer principles would be considered in the subsequent months.<sup>5</sup>

Consequently, this consultation paper “Offers in the I-SEM Balancing Market”, hereafter referred to as the “Consultation Paper” identifies potential offer control options that would govern complex offers (i.e. Start Up, No Load, Incremental and Decremental costs) in the I-SEM Balancing Market.

In considering offer control options for this Consultation Paper, the SEM Committee contemplated making minimal change to the existing BCOP. However, existing issues around the current bidding control arrangements, such as transparency of what costs are appropriate and what are not, would continue (e.g. the current arrangements do not explicitly state how some cost items should be applied). Experience with legal, and other challenges, to the existing arrangements would also persist.

Additionally, it is important to consider that the I-SEM is a more liberal market with numerous timeframes in which generators can employ differing bidding strategies. The I-SEM is very different in nature to the current market in which the current arrangements operate. Consequently, the SEM Committee currently does not consider the implementation of a minimal approach to amending bidding controls as a viable option for the I-SEM Balancing Market.

The SEM Committee is therefore consulting on the following options for amending the current bidding controls under I-SEM:

- **Option 1 “Offer Principles”:** draws upon the approach to controlling generator commercial behaviour taken in the existing BCOP. Specifically, Option 1 proposes a revised Balancing Market Offer Principles Code of Practice, underpinned by a licence condition in the generator licence requiring compliance with such a code, in order to reflect market changes under the I-SEM and experience from market monitoring in SEM. Additionally, under Option 1, content regarding offer controls, which is contained within existing electricity generation licences will be incorporated into a revised code, which will provide greater clarity, flexibility and detail to market participants (see Annex A for full details).

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<sup>5</sup> This consultation has been published in advance of the consultation on changes to generation licences to allow generators to consider the appropriateness of the licence changes in the context of these proposals in relation to offers for non-energy actions.

- **Option 2 “Offer Limits”**: involves adopting a different approach to that taken in the existing BCOP by proposing explicit Offer Limits, published by the RAs. Calculation of the Offer Limits would be based upon the same principles that would be contained in Option 1. The principles underpinning the methodology used to calculate these limits would be fully consulted upon to ensure transparency. This framework would permit generators to submit any offer equal to, or lower than, the published Offer Limits.

Regardless of what option is chosen for the I-SEM, envisaged offer controls (whether they operate as envisaged in Option 1 or in Option 2) will supersede all previous SEM Committee decisions on bidding principles and bidding controls in the SEM, including the existing BCOP.

For clarity, the SEM Committee notes that separate to this Consultation Paper, the RAs will be issuing a consultation on modifications to licences issued by the RAs, including generation licences. Such consultation may (subject to the outcome of the present consultation) be used to consult on the licence changes, which will underpin compliance with any revised offer controls that are determined by the SEM Committee<sup>6</sup>.

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## 2.2 SCOPE OF THIS PAPER

The options outlined in the following paper will determine the offer arrangements that will be applied to actions deemed to be non-energy in the I-SEM Balancing Market only.

Whilst the imposition of offer controls will be restricted to non-energy actions in the I-SEM Balancing Market, in the event that behaviour is deemed by the SEM Committee to be unacceptable, the SEM Committee will be prepared to develop and implement ex-ante offer controls either on individual participants or across the wider market if observed behaviour is deemed to warrant this. The MMU will continually monitor generator bidding patterns and behaviour and shall report on any suspicious activity to the SEM Committee.

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<sup>6</sup> Annex B provides draft licence conditions on Balancing Market Offer Principles and on Balancing Market Offer Limits. Please note that these drafts are subject to further development, including in light of the outcome of this consultation.

### 2.3 PURPOSE OF THIS PAPER

The SEM Committee invite responses from stakeholders regarding the options identified within this Consultation Paper (i.e. Option 1 and Option 2) in order to establish offer control arrangements for the Balancing Market in I-SEM.

This Consultation Paper is structured as follows:

- Section 2: introduction;
- Section 3: provides background information regarding existing bidding control arrangements in the SEM. Additionally, this section summarises relevant market changes under I-SEM that impact on existing bidding controls, while outlining the rationale for revising bidding control arrangements;
- Section 4: elaborates on the offer control options (i.e. Option 1 and Option 2) identified by the SEM Committee for the Balancing Market in I-SEM; and
- Section 5: outlines next steps.



### 3 REVIEW OF BIDDING ARRANGEMENTS IN THE SEM & I-SEM

This section provides a synopsis of bidding control arrangement in the SEM and offer controls in I-SEM in order to facilitate market participants and other stakeholders in responding to this Consultation Paper. For the avoidance of doubt, the information contained within this section is for information purposes only, and the reader should refer to relevant documentation including the existing BCOP and the Market Power Decision Paper (SEM-16-024) for detailed information on bidding controls.

#### 3.1 BIDDING CONTROLS IN SEM

The current policy underpinning the market power mitigation strategy in the SEM is partially based on bidding principles for generators, which require generators to bid cost reflectively. As part of the implementation of the bidding framework, the RAs published in 2007 a BCOP (AIP-SEM-07-430), which was subsequently updated by the RAs, with the latest version of the BCOP published in 2014 (SEM-14-019).

In essence, the BCOP sets out the general principles for valuing cost items for generators operating in the SEM in order to ensure generators cannot exercise market power. These general principles require generators to ensure that their bids (contained in the Commercial Offer Data submitted to the market operator) are based on their Short Run Marginal Cost (SRMC). Whilst the BCOP refers to SRMC, the calculation of SRMC is not contained within the BCOP. Instead, the calculation of SRMC is clarified in the generation licences issued by the RAs (see Table 3.1).

**Table 3.1: Calculation of SRMC**

The Short Run Marginal Cost related to a generation unit in respect of a Trading Day is to be calculated as:

- (a) the total costs that would be attributable to the ownership, operation and maintenance of that generation unit during that Trading Day if the generation unit were operating to generate electricity during that day;

minus

- (b) the total costs that would be attributable to the ownership, operation and maintenance of that generation unit during that Trading Day if the generation unit was not operating to generate

When calculating the SRMC of a generation set or unit in respect of a trading day, the BCOP states the cost items are to be valued at their Opportunity Cost, as defined within the BCOP. Additionally, the BCOP provides, inter-alia, guidance to generators on how to calculate Opportunity Cost, which they are obliged to use when submitting their complex bids (see Table 3.2).

**Table 3.2: Definition and Calculation of Opportunity Cost**

7. The Opportunity Cost of any cost-item shall comprise the value of the benefit foregone by a generator in employing that cost-item for the purposes of electricity generation, by reference to the most valuable realisable alternative use of that cost-item for purposes other than electricity generation.

8. Save as otherwise provided in this Code, in calculating the value of the benefit foregone in employing a cost-item for the purposes of electricity generation, the following principles shall, unless it can be demonstrated to the satisfaction of the Authority or the Commission (as appropriate) that there is good cause not to, be applied:

(i) where there exists a recognised and generally accessible trading market in the relevant cost-item, the Opportunity Cost of that item should reflect the prevailing price of the cost-item, which may be for immediate or future delivery or use as appropriate to the circumstances of the relevant generator, having regard to:

(a) costs the relevant generator would incur in offering that cost-item for sale, or acquiring that cost-item, on a recognised and generally accessible trading market;

(b) reasonable provision for the variability of the prevailing price of a cost-item on a recognised and generally accessible trading market;

(ii) where no recognised and generally accessible trading market exists in the relevant cost-item the Opportunity Cost of that item should reflect the costs which would be incurred by the relevant generator in replacing that cost-item; and

With reference to enforcement, a licence condition “Cost Reflective Bidding in the Single Electricity Market” was inserted into all generation licences issued by the RAs. As stated in the Market Power Decision Paper (Section 7.1.2), the SEM Committee’s view is that the current BCOP has been effectively enforced through monitoring and investigations, and it has likely prevented market power abuses, especially where

local market power has arisen due to system constraints, despite the fact that formal local market power mitigation measures have not been formulated.

### 3.2 CHALLENGES TO THE APPLICATION OF THE BIDDING CODE OF PRACTICE (BCOP) IN THE SEM

Over the course of the SEM, there have been challenges<sup>7</sup> as to how certain costs should or should not be included in generator offers. Some of these challenges have been dealt with by the Market Monitoring Unit (MMU), some by the SEM Committee and others through the courts. It could be argued that many of these challenges have occurred as a result of the SEM arrangements being expressed in high level terms and not explicitly stating what costs can be included in offers, and how these costs should be valued. On various occasions the high level nature of the bidding principles has required the SEM Committee to consider how certain cost items can, or cannot, be bid. This has led to lengthy consultation processes that have drawn a large amount of RA and participant resources.

#### Carbon Levy

One example where a decision by the SEM Committee was challenged through the courts was the bidding of the Carbon Levy. In 2010, a policy was introduced by the Irish Government to introduce a carbon levy on fossil fuel based energy generation. The SEM Committee concluded that the cost of this levy could not be included by fossil fuel based generators as part of their bids in the SEM.

Two of the participants operating in the SEM, Viridian and Endesa, brought a High court case against CER on the decision that prohibited the inclusion of the levy in price bids. The High court decided in the regulator's favour in late 2010.

An appeal to the Supreme Court stating that the High Court judge had erred in its judgment was subsequently brought by Viridian. In February 2012, the Supreme Court ruled that the High Court had erred in its judgement. It stated that the prohibition on the inclusion of the levy in electricity generators' price bids was incorrect. In its decision, the Supreme Court stated that they considered the levy to be a legally unavoidable short-run marginal cost. The conclusion of the Supreme court quashed "the directives of the Commission for Energy Regulation prohibiting the levy from being "bid-in" and thereby allow the appeal". Generators were required as a result of the decision to include the cost of a carbon levy in their bids.

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<sup>7</sup> These challenges have resulted in court proceedings, participant queries regarding other unit bids, investigations by the MMU and investigations by the SEM Committee.

### Gas Transportation Capacity Costs (GTC)

In addition to the gas in which they use, gas fired electricity generators require sufficient capacity on the gas network to transport that gas to their generating stations. When the terms of the BCOP were drawn up in 2007, the RAs were of the view that the availability of GTC products meant that the cost of GTC could not form part of a generators' bid. However, the RAs noted that that the availability of GTC may change and so this view may need to be updated in the future.

Following requests from industry to re-assess this initial view, especially following the decision on the Judicial Review into the Carbon Levy, the need to clarify how GTC costs are to be treated led to the SEM Committee consulting on the matter (SEM-12-089), publishing provisional guidance in June 2013 (SEM-13-039) and consulting on amendments to the BCOP in July 2013 (SEM-13-051).

In its decision (SEM-14-018), following extensive consultation with the wider industry, the SEM Committee decided to modify the BCOP so as to:

- provide a specific valuation principle for GTC;
- specify a principle of good market behaviour which provides that generators must make 'reasonable' assessments when including GTC costs in their bids; and
- specify a principle of good market behaviour which would require generators to bid on the basis of an expectation that they will act so as to avoid unreasonable exposure to certain charges.

Short-term GTC costs have since been applied to a number of generator offers from this time.

### Other Queries and Complaints

Throughout the course of the SEM both the MMU and SEM Committee have continually looked into, and at times challenged, generator bids into the market. There have also been numerous times when generating units have passed on concerns about how other units have bid into the market.

The level of resource taken to constantly review bids, from both the MMU and generators themselves, has been considerable. In many occasions, assessments on generator behaviour have been brought to the attention of the SEM Committee. In one such instance it led to a SEM Committee inquiry into bidding practices (SEM-08-069). However in other cases the result was less resource intensive and issues have been resolved by the MMU, in conjunction with the individual generator.

### 3.3 OFFER CONTROLS IN I-SEM

Notwithstanding the effectiveness of the existing BCOP, the SEM Committee expressed a view within the Decision Paper (Section 7.3.4) that the introduction of I-SEM provides an opportunity to make any offer controls more targeted, as no ex-ante offer controls will be applied to offers submitted by market participants in the DAM and IDM.

Specifically, offer controls will only be applicable to complex offers arising from non-energy actions in the I-SEM Balancing Market (and potentially to incs and decs for energy actions in the Balancing Market, if observed behaviour is deemed to warrant this).

In order to submit complex offers in the I-SEM Balancing Market, the I-SEM Energy Trading Arrangements (ETA) workstream identified that all Balancing Service Providers (BSPs) will be required to provide costs and technical information to the TSOs after the completion of the DAM. For this purpose, the TSOs will require what are known as ‘three-part offers’ from the generators for each generating unit concerned.

### 3.4 RATIONALE FOR CHANGE TO BIDDING CONTROLS

As indicated in Section 2.2, offer controls in I-SEM will only apply to the Balancing Market. Additionally, within the Market Power Decision Paper, the SEM Committee noted that further clarity was required on offer controls, and that the detailed wording of such offer principles will be considered by SEM Committee.

In particular, the SEM Committee is minded that such clarity (along with additional flexibility) can, in part, be achieved by transferring details (e.g. calculation of SRMC) from the Generation Licence Condition “Cost Reflective Bidding in the Single Electricity Market” to a revised offer controls document. See Annex B for further detail on what the RAs anticipate could be included in such a licence condition.

The SEM Committee notes that the generation licence condition “Cost Reflective Bidding in the Single Electricity Market” states that the BCOP will “make provision” for specific cost items, including fuel, Emissions Trading Scheme credits, Variable Operational and Maintenance (VOM) costs, start-up and no-load costs, and “any other [relevant] costs.” However, it could be suggested that the BCOP only provides minimal detail on:

- Start-up and No Load costs;
- VOM costs; and
- Handling energy, emission, or time-limited units.

Additionally, the SEM Committee notes the current BCOP only provides a definition of Opportunity Cost that can be applied to any cost item, but does not define or explain any other cost items.

In light of such issues (e.g. minimal detail on Start Up and No Load Costs), the SEM Committee is of the view that any revised offer control may need to address these issues under I-SEM. The subsequent section of this Consultation Paper identifies the various options (i.e. Option 1 and Option 2) considered by the SEM Committee to ensure compliance with offer controls in I-SEM.

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### 3.5 CONSULTATION QUESTION 1

Respondents are asked to consider the following question in their responses to this Consultation Paper:

1. Do you agree with the proposed approaches to offer controls in the Balancing Market for I-SEM outlined above? If a respondent does not agree with any part of a proposed approach, please specify why and provide detailed alternative.

## 4 OFFER CONTROL OPTIONS FOR THE I-SEM

### 4.1 INTRODUCTION

Determining the appropriate offer arrangements will be critical to ensuring that generators dispatched in the I-SEM for non-energy actions in the Balancing Market are appropriately compensated. It is also required to ensure that suppliers, and in turn consumers, are paying a 'fair price' for this generation. Therefore, this section outlines the following options as potential offer control arrangements when submitting 3-part offers under the I-SEM:

- Option 1: Offer Principles; and
- Option 2: Offer Limits.

### 4.2 OPTION 1: OFFER PRINCIPLES

Under Option 1, a set of detailed offer principles have been developed that sets out how generators can construct their 3-part offers (see Annex A for full details).

The aim of Option 1 is to draw upon experience gained from bidding principles applied in the SEM and apply them to a new principles document that is suitable for the I-SEM. The main changes under Option 1 relative to the existing BCOP are outlined below:

- Redefinition of SRMC;
- Revision to eligible cost items;
- Revision to the definition of Opportunity Cost; and
- Changes to the inclusion of foregone revenues.

Option 1 will also require a new licence condition to be included in the Generator Licence. Draft text for this condition is included within Annex B to this Consultation Paper for information.

#### **Section 4.2.1: Redefinition of SRMC**

The SEM Committee notes that there is an argument that definition of SRMC (which requires a total trading day calculation) for bidding controls under SEM may not be consistent with economic definitions of SRMC. Essentially, marginal cost is the increment to total cost that results from producing an additional increment of output, and is a function solely of variable costs (since fixed costs, by definition, are costs unaffected by changes in output). Therefore, potentially inconsistencies with

the existing definition of SRMC (as defined in the generation licence) relative to standard economic definitions include the following:

- SRMC is an incremental, not total, cost. It is the change in total cost as a result of increasing generation output by the smallest incremental increase<sup>8</sup>. Therefore, costs that vary with generation output are generally part of SRMC, while fixed costs are not (except e.g. start-up costs in the period when a generator starts up); and
- Not all daily costs should be included in SRMC because some of those cost items are fixed for the day and do not vary with the level of generation – therefore there is an issue with the ‘Trading Day’ basis of the SEM definition.

A more practical definition of SRMC for offer controls under I-SEM would involve redefining SRMC on a more granular basis, potentially corresponding to the settlement period and not as long as a full Trading day.

The SEM Committee notes that the definition of SRMC, as provided in Annex 1, should be consistent with the time granularity of the market that it applies to. Since the offer principles would apply to the Balancing Market, the definition should be defined for half-hourly Imbalance Settlement Periods (ISP) that will apply at I-SEM Go Live date.

#### **Section 4.2.2: Eligible Cost Items**

In general, only those cost items that are consistent with standard economic definitions of SRMC should be included in market offers (i.e. they must represent actual costs directly associated with electricity generation).

With reference to eligible cost items, the SEM Committee notes that the current SEM BCOP does not apply any definition to VOM costs, which would provide guidance to generators. Within Option 1, the SEM Committee clarifies what variable operational costs that can be included as eligible costs items. However, under Option 1 maintenance costs are not considered variable in nature and are therefore not considered by SEM Committee as eligible cost items for inclusion in offers.<sup>9</sup>

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<sup>8</sup> In the Balancing Market, and electricity markets in general, the outputs are measured in MWh of electricity generated. Therefore, the marginal cost is the incremental increase in total cost from generating additional MWh. Therefore, the variable costs relevant to the BM are those costs that vary with MWh generated.

<sup>9</sup> Maintenance and overhauls at power stations typically occur periodically on an annual or a multiannual basis. Therefore these are costs that do not vary with generation and do not conform to the definition of short run marginal costs for electricity.



### **Section 4.2.3: Revision to the Definition of Opportunity Cost**

Under Option 1, the SEM Committee proposes removing the following clause from the existing BCOP for determining the value of the benefit forgone in employing a cost-item for electricity generation:

*“reasonable provision for increased risks to plant and equipment as a result of the operation of a generation set or unit may be included”* (paragraph 8 of SEM BCOP)

The SEM Committee notes that the “value of the benefit forgone in employing a cost-item for the purposes of electricity generation” (the calculation which paragraph 8 of the SEM BCOP provides for) is, by definition, the opportunity cost. Therefore there are arguments that the provision for “increased risks” does not belong within a definition of opportunity cost, as it does not represent a benefit foregone – and is arguably being added on top of the standard definition of opportunity cost.

### **Section 4.2.4: Foregone Revenues**

Under Option 1, it is proposed that an increased risk of plant failure from increased production, and therefore increased risk of not being able to generate in a period where the unit would otherwise expect to generate and earn revenues, should not be included in the definition of SRMC.

The SEM Committee is of the view that costs included in SRMC should be actual costs incurred as a direct result of increased generation rather than an estimated cost based on probabilities and theoretical costs. The SEM Committee notes that there are also further issues with allowing forgone revenues in SRMC including:

- foregone revenues are arguably not opportunity costs associated with any single input used in electricity generation and therefore could be better placed as an additional item in SRMC, rather than within a cost item in SRMC;
- establishing that a certain mode of operation today leads to a loss of some revenues in the future is arguably speculative and accordingly not an appropriate component for an SRMC calculation (for example the SEM Committee would not allow generating participants to use a potential future fuel price in the opportunity cost of using fuel to generate electricity); and
- allowing generators to include such potential, future foregone revenues today may increase today’s market price. The generator may still receive the

revenue in the future (e.g. if it does not fail), and the consumers in effect pay twice (once for the chance that the generator may not be able to generate, and second for the electricity it subsequently generates).

#### **Section 4.2.5: Other Notable Changes**

Under Option 1, generators will also be able to offer in Long Term Gas Transportation Capacity (GTC) costs as part of their offers. The proposed code of practice states that generators may include the greater of the amount which they would realise by disposing of the unused GTC or the annual exit capacity purchase price.

Such an approach is proposed on the basis that not all daily GTC products are currently available in Northern Ireland and that the inclusion of Long Term GTC costs would facilitate equitable treatment of generators in Ireland and Northern Ireland.

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### **4.3 OPTION 2: INTRODUCTION OF OFFER LIMITS**

Over the course of the SEM, disagreement between the RAs and generator participants as to the proper interpretation of the bidding principles have led to challenges being brought as to how certain costs could or should be included in generator offers. Some challenges, in particular to the application of the Carbon Levy, have led to court proceedings. This in turn led to considerable resources, from both RAs and generators, being deployed in the resolution of these disagreements. It could be argued that these disagreements and the associated legal and administrative burden are a consequence of the bidding principle arrangements being too ambiguous and open to interpretation.

Therefore, Option 2 (i.e. Offer Limits) contemplates the introduction of explicit offer limits calculated and published by the RAs into the I-SEM regulatory framework as an alternative approach to controlling generator commercial behaviour.

Under Option 2, the process by which generators would submit their 3-part offers based on their interpretation of the offer principles would be removed. In its place, a series of Offer Limits would be determined by the RAs and generators would be able to submit any offer equal to, or lower than, the published limits (with the exception of Decs, which is discussed in section 4.3.1).

The remainder of this section sets out at a high level the envisaged operation and specification of a limits framework for the three-part offers under the I-SEM in an effort to provide substance for respondents. The SEM Committee considers however

that a further detailed consultation would be required to establish detailed arrangements should Option 2 be selected for implementation.

#### **Section 4.3.1: Form of the Offer Limits**

A limits framework would involve the SEM Committee calculating and imposing a set of limits on generator offers, expressed directly in the appropriate metric of the offer element (€/MWh for Inc offers for example). In the SEM, generator bids are made up of three components - Energy Costs, No-load Costs and Start up Costs. In the I-SEM, 3-part offers in the Balancing Market will be broken into the following elements:

- Start-up Cost;
- No-Load Cost; and
- Inc/Dec Price.

##### Start Up Cost

Three separate Offer Limits will be calculated and applied to a generator's start-up cost, to reflect the three heat states that a generator could be starting under. These are referred to as a cold start, warm start and a hot start. A definition of each of these is provided below;

- Cold Start: means any Synchronisation of a Generator Unit that has previously not been Synchronised for a period of time longer than its Accepted Warm Cooling Boundary;
- Warm Start: means any Synchronisation of a Generator Unit that has previously not been Synchronised for a period of time longer than its Accepted Hot Cooling Boundary and shorter than or equal to its Accepted Warm Cooling Boundary; and
- Hot Start: means any Synchronisation of a Generator Unit that has previously not been Synchronised for a period of time shorter than or equal to its Accepted Hot Cooling Boundary.

The cooling boundaries for each unit are provided within a generating units Technical Offer Data (TOD). The generator will be able to offer a price up to, but not above, the published limit for each applicable state.

### No-load Cost

No-load cost is incurred at a flat rate per hour when generation is greater than zero, and represents the element of operating cost for a Generator Unit that is invariant with the level of Output and is incurred at all times when the level of Output is greater than zero. A single limit for no load cost could be applied and calculated as a cost per hour as a standalone component, which could then be adjusted as appropriate for the length of the Balancing Market settlement period.

Specific formulation for the no-load limit would be developed under further consultation, with regard in particular to the appropriate factoring of unit Minimum Generation level.

### Incremental and Decremental Price (Incs and Decs)

A limit would be applied to the generator Incs, upon which the generator can offer up to, but not above, regardless of the amount of MW it has been asked to generate. Meanwhile a floor would be applied to generator Decs which would allow the generator to submit any Dec offer equal to, or above, the floor.

The Dec price floor shall also be required to be less than or equal to the Inc offer limit. This is because there is a principle that has been laid out in the plain English version of the Balancing Market Data Submission where it states that “at no point can the prices between two quantities in the Dec curve exceed the value of the prices for the Inc curve between those same two quantities, but inc and dec quantities may overlap at the same price”.

This principle will also be covered and enshrined in the I-SEM Trading and Settlement Code.

### **Section 4.3.2: Methodology behind the calculation of the Offer Limits**

In order to ensure transparency and to allow for generator input into the calculations, the SEM Committee would consult on the principles underpinning the methodology used to calculate the Offer Limits. Any amendments to these principles would also be subject to consultation to allow for industry input.

It is proposed that the principles underpinning the methodology used to calculate the limits would be based upon the principles outlined in Option 1 (see Annex A), which build on the lessons learned from the SEM. This methodology could then be used to calculate a published set of Offer Limits before Go-Live.

One key issue to be resolved would be to determine how periodically the limits should be reviewed. This then breaks into two sub questions:

- How often the limits themselves should be reviewed to take into account movements in fuel and carbon prices and other inputs; and
- How often the methodology itself should be reviewed.

The SEM Committee considers that the value of the offer limits could be reviewed on a quarterly basis to strike a good balance between the desire to track movement in input costs without encumbering itself or industry with onerous process. However, the SEM Committee would retain an ability to carry out an ad hoc review at any stage should there be any extreme movements in any of the generators costs, such as in the event of a spike in fuel price.

The methodology itself could then be reviewed 12 months following Go-Live and then as required going forward. The SEM Committee would welcome views as to the best settings for regular maintenance and review of the offer limits and the methodology.

#### **Section 4.3.3: Grouping of Generator Units**

The SEM Committee considers that the application of offer limits could be carried out via two methods:

- Cluster generators into groups and calculate an offer limit for each group; or
- Calculation of an offer limit for each individual generating unit.

Where appropriate, the SEM Committee proposes to group generating units into clusters and shall calculate offer limits for each cluster. These clusters would be based upon the unit type. For example, all CCGTs could be grouped together and a single set of Offer Limits applied to these units. A driving principle to the decision to cluster units into a particular group would be that the characteristics of generators in each group would be such that short-run operating costs will be expected to all be relatively close to each other.

The SEM Committee also envisages instances where the placing of certain generators into groups may not be appropriate. For example, if a plant is 'must run' in the market for system reasons, then it will have no incentive to compete against any other unit and will likely submit an offer equal to the offer limit in all instances. In this case, the SEM Committee will consider whether it would be appropriate to impose a separate offer limit on that particular unit.

The methodology for and any proposed specific grouping of units would form part of a follow up consultation on the calculation, form and publication of the first set of offer limits before Go-Live.

#### **Section 4.3.4: Exceptions Management**

There will be times where generator participants may be forced to submit an offer outside of the published limits. For example if there is a physical outage of the steam turbine within a CCGT train, that plant may be required to run in OCGT mode, thus materially affecting the cost of its operation and placing the generator in a loss-making position while adhering to the published limit. Alternatively, there could be circumstances whereby a unit may need to run in a secondary fuel mode, or other circumstance not catered for within the limits calculation.

One possible arrangement could involve the generator having the freedom to breach the offer limits in practice under exceptional physical circumstances, under the knowledge that the breach will be reviewed by the MMU with reference to strict evidence-based criteria. A detailed exceptions management process would form part of the further consultation.

#### **Section 4.3.5: Precedent for Framework**

Such a framework would not be the first time limits have been used in a European energy market. Offer Limits has been implemented for the calculation of start-up costs in the Italian Balancing Market. Generator offers are subject to limits calculated based on a unit price derived from the average value of the minimum offer prices over the previous year that were submitted by generation units with similar technology. The start-up offers cap calculation process is contained in chapter 4 of the Dispatching Regulations of the Italian Grid Code<sup>10</sup>.

#### **Section 4.3.7: Implementation**

The introduction of Offer Limits should not impact upon TSOs, and will not require interaction with I-SEM IT systems development (similar to Option 1).

Option 2 will also require a new licence condition to be included in the Generator Licence. Draft text for this condition is included within Annex B to this Consultation Paper for information.

Should the SEM Committee decide that an Offer Limits regime should be put in place further consultation will be required on the implementation of that regime, including on the terms of the relevant statement of principles and on the calculation, form and publication of the first set of offer limits before Go-Live. It is envisaged that this consultation would be drafted and published in Q1 2017. Following consideration of

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<sup>10</sup> Terna, Grid Code, [Chapter 4 - Dispatching Regulations](#)

responses a decision would be published at the end of Q2 2017. Offer Limits would then be published by the SEM Committee in Q3 2017, in advance of Go-Live.

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#### 4.4 ASSESSMENT OF OPTIONS

The following section provides a high-level overview of the advantages and disadvantages of each of the options.

##### **Section 4.4.1 Option 1: Offer Principles**

###### Advantages

The following are some of the key advantages of Option 1:

- i. Option 1 is based upon current arrangements, which have been in place for nearly a decade, and are well understood by all participants. In a time in which generators are being exposed to a lot of market changes, Option 1 maintains a framework in which generators are familiar and understand.
- ii. Delivery of Option 1 should be relatively straightforward and implementable within the I-SEM timetable for Go-live. The arrangements would only apply to non-energy actions in the Balancing Market with no further consultation and decision papers being required from the SEM Committee.
- iii. The principles regime will result in the fair and equal treatment of all offers. Generators will be treated in a fair and equitable manner and shall all be subject to the same rules and processes. The generator specific nature of the arrangements under Option 1 means that all generator non-energy offers should reflect efficient costs.
- iv. All generators will be given equal access to competition specific information and will be able to see if their peers are complying with the rules set out. These characteristics contribute to the integrity of this segment of the market so that no unfair advantage (actual or perceived) is conferred to one generator over another.
- v. From a theoretical perspective, requiring units tagged as non-energy in the Balancing Market to offer SRMC should lead to competitive outcomes. Consumers will also be protected from must run generators being able to submit expensive offers into this segment of the market.

Finally, it should be noted that offer arrangements for generating units that receive a Reliability Option (RO) due to local issues will also require to be settled based on the

methodology outlined under Option 1, even if Option 2 “Offer Limit” is the preferred option (i.e. an Option 2 only approach would potentially allow these units to make excess profits, where this potential issue would not occur under Option 1).

### Disadvantages

There are disadvantages associated with Option 1, which include the following:

- i. Under Option 1 there exists the risk that the framework will result in high prices at the perceived boundary at what might attract enforcement action from the RAs. Units could attempt to use the principles to effectively make offers as high as possible. For example, if a unit is must run in the market, under Option 1 there exists no incentive for the unit to innovate. However there does exist an incentive to submit offers as high as is possible under the framework. In this sense the framework may not create an environment in which generators compete away profits.
- ii. Historically, as discussed in Section 3.2, there has been many challenges in the SEM as to whether to include, and how to value, a number of cost items. The high level nature of the principles arrangements have led to debate as to whether some costs should be included in generator offers, and to how some cost items should be valued. This has been extremely resource intensive for the RAs and affected participants, and at times has led to resources being diverted from other areas. It has also led to issues around transparency and how different units value similar cost items. There have also been problems with differing jurisdictional arrangements and their impact upon generator bids. For example, units in Ireland have the ability to include Gas Capacity Exit Costs in their bids, whereas generators in Northern Ireland do not. This is because no market for the purchasing of short-term capacity of this product exists in Northern Ireland.

### **Section 4.4.2 Option 2: Introduction of Offer Limits**

#### Advantages

The following are some of the key advantages of Option 2:

- i. Option 2 would incentivise generators to increase their units efficiency. By reducing the cost of dispatching their unit they will be able to avail of greater



profits if they are must-run, and if they are in competition with other units this option should facilitate competition between units. This is because the unit will be able to offer up to the offer limit. The more the efficient the unit, the greater the amount of infra-marginal rent that the unit will be able to earn as its actual costs could be below this limit.

- ii. From an industry perspective, the introduction of Offer Limits could benefit existing generators and prospective investors in generation on the basis that compliance with the offer limits regime would be a relatively easy task for generators to demonstrate, thereby decreasing the risk of challenge by the SEM Committee. Modelling and prediction of forward revenues for new investors could also be aided by the observability of simple offer limits expressed in € or £ in place of descriptive principles.
- iii. Generator participants could also benefit from a 'level playing field' as there is less potential for ambiguity in the rules that govern the calculation of offers.
- iv. From a regulatory perspective, the monitoring of Offer Limits compliance would be substantially less resource-intensive than the monitoring of compliance with a BCoP. Offer Limits would reduce the potential of enforcement actions by the SEM Committee being contested, as breach of Offer Limits would be clearly observable. Whilst there would be an administrative burden placed upon the RAs, in the development of the methodology underpinning the limits, and their regular re-calculation, this would become a standard business as usual process and would substitute for the burden of calculations and modelling that the MMU must carry out in any case under Option 1 in order to enforce compliance with a BCoP.

### Disadvantages

There are disadvantages associated with Option 2, which include the following:

- i. There will be a requirement to engage in a follow up consultation on the detail behind the calculation, form and publication of the first set of offer limits before go-live. Given the challenging timescales associated with the development of I-SEM, and the limited timeframe before Go-live, this will be challenging. There will also be ongoing operational work required to continually update the tariffs. Tariffs will also be required to be set for all technologies that operate in the market.
- ii. There is also the potential that the introduction of offer limits will lead to a loss of efficiency and higher costs because units may simply offer at the outer limit of what is deemed acceptable, leading to a potentially suboptimal

solution. Offer limits must be set at the level of the least efficient unit, hence generators have an incentive to innovate and increase their efficiency. However, customers may not benefit from the reduction in costs as generators could simply continue to offer up to the offer limit. There are also a number of questions as to how quickly the change in limits could also be calculated in response to sudden market changes.

- iii. The framework that underpins Option 2 would also be based on the principles set out in Option 1. So there exists the potential for disagreement in circumstances where these principles are interpreted by the SEM Committee so as to set limits that generating units deem unacceptable.

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#### 4.5 CONSULTATION QUESTION 2

Respondents are asked to consider the following question in their responses to this Consultation Paper:

2. Which of the options identified within this Consultation Paper would be most appropriate for the introduction of offer controls under I-SEM?<sup>11</sup> If a respondent does not agree with any of options identified, please specify why and provide detailed alternative. If a respondent has a preferred option, please indicate whether any aspect of the preferred option should be amended?

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<sup>11</sup> Note: Under I-SEM, offer controls will only be applicable to complex bids arising from non-energy actions in the balancing market (and potentially to complex bids arising from energy actions in the balancing market, if observed behaviour is deemed to warrant this).

## 5 NEXT STEPS

Interested parties are invited to respond to the consultation, presenting their views on the options proposed in Section Four of this Consultation Paper.

Responses to the Consultation Paper should be sent to Brian Mulhern ([brian.mulhern@uregni.gov.uk](mailto:brian.mulhern@uregni.gov.uk)) and James Curtin ([jcurtin@cer.ie](mailto:jcurtin@cer.ie)) by 17:00 on 18<sup>th</sup> November 2016.

Please note that we intend to publish all responses unless marked confidential. While respondents may wish to identify some aspects of their responses as confidential, we request that non-confidential versions are also provided, or that the confidential information is provided in a separate annex. Please note that both RAs are subject to Freedom of Information legislation.

## ANNEX A: OPTION 1 – BALANCING MARKET OFFER PRINCIPLES CODE OF PRACTICE

This annex includes the SEM Committee proposed wording for the Balancing Market Offer Principles Code of Practice for the I-SEM balancing market based on the proposed approach as outlined in section 2 of this consultation paper. This should be read in conjunction with Annex B, which provides detail on the associated draft licence condition for both option 1 and 2. Respondents are asked to submit comments on this text as part of their response to question 2.

### COMPLEX OFFERS IN THE I-SEM BALANCING MARKET

#### I. INTRODUCTION

1. This [document] is published jointly by:
  - a. the Northern Ireland Authority for Utility Regulation (the Authority), in accordance with [paragraph ??] of the following conditions of licences in Northern Ireland:
    - (i) [Condition ??] of each electricity generation licence; and
    - (ii) [Condition ??] of the public electricity supply licence granted to Northern Ireland Electricity plc under Article 10(1) of the Electricity (Northern Ireland) Order 1992 under a licence document dated 31 March 1992 and transferred to NIE Energy Limited; and
  - b. the Commission for Energy Regulation (the Commission), in accordance with [paragraph ??] of the following conditions of licences to generate electricity in the Republic of Ireland:
    - (i) [Condition ??] of the interim electricity generation licence granted to the Electricity Supply Board on [21 April 2006];
    - (ii) [Condition ??] of the electricity generation licence granted to Synergen on [31 July 2002]; and
    - (iii) [Condition ??] of electricity generation licences granted to all other licensed generators of electricity.

2. In accordance with [paragraph ??] of each relevant condition the Licensee must ensure that, in [formulating and submitting offers to the Single Market Operation Business under the Single Electricity Market Trading and Settlement Code] (whether by the Licensee itself or by any person acting on its behalf in relation to a generation set or unit for which the Licensee is the licensed generator), it acts so as to ensure its compliance with this document.

## II. APPLICATION OF THIS CODE TO COMPLEX OFFERS

3. The provisions of this Code of Practice shall apply only to the [Commercial Offer Data] submitted to the [Single Market Operation Business] in the [Balancing Market] under the [Single Electricity Market Trading and Settlement Code] in the form of complex offers for non-energy actions, such complex offers consisting of three components:
  - a. a price component consisting of up to 10 price-quantity pairs (€/MWh);
  - b. a start-up costs component (€/start);
  - c. a no load costs component (€/hour).

## III. COST-REFLECTIVE BIDDING

4. Licensees shall ensure that each of the components of the Commercial Offer Data to which this Code of Practice applies is cost-reflective.

### Cost reflectivity of price component

5. The price component of such Commercial Offer Data shall be treated as cost-reflective only if, in relation to each relevant generation set or unit, it is equal to the short run marginal cost related to that generation set or unit in respect of that Imbalance Settlement Period (**SRMC**), calculated in accordance with the following paragraphs.
6. For the purposes of the previous paragraph, SRMC equals the incremental change in the costs of operating the generation set or unit during an Imbalance Settlement Period incurred as a result of either increasing generation output by one additional unit (MWh) of energy or reducing generation output by that amount (the resulting output level being referred to as the **Relevant Output Level**), [assuming the generation set or unit is already online and generating at a given output level at or above its [Minimum Stable Capacity]]

- 7A. For a given level of output, the SRMC is to be calculated as:
- a. the [total of those eligible costs listed in paragraphs [14] to [21] below] attributable to the generation set or unit during an Imbalance Settlement Period at the Relevant Output Level;
  - minus
  - b. the [total of those eligible costs] attributable to that generation set or unit during that Imbalance Settlement Period at an output level which is 1MWh lower than the Relevant Output Level.
8. Each of the items that are listed as eligible costs in paragraphs [14] to [21] below shall be included in the calculation of SRMC. Any items not listed in those paragraphs, including but not limited to, potential, future forgone revenues or potential future penalties shall be excluded from that calculation. Costs associated with starting up the generation set or unit and no load costs shall also be excluded from that calculation.

**Cost reflectivity of start-up cost component**

9. The start-up cost component of Commercial Offer Data shall reflect the cost of starting the generation set or unit in three operational states: cold, warm, and hot start. It shall also reflect the costs of starting the set or unit during the [Operating Day], assuming that the generation set or unit is offline, irrespective of whether the generation has acquired ex-ante trading positions in the [Day-Ahead] and [Intraday Markets].
10. Each of the items that are listed as eligible cost items in paragraphs [22] to [23] below shall be included in the calculation of the start-up cost component of Commercial Offer Data. Any items not listed in those paragraphs shall be excluded from the calculation of that component.

**Cost reflectivity of no load cost component**

11. No load costs shall reflect the fuel cost required to maintain zero net output at synchronous generator speed adjusted to ensure the offer curve submitted by the generation set or unit is monotonically increasing.
12. Each of the items that are listed as eligible cost items in paragraph [24] below shall be included in the calculation of the no load cost component of

Commercial Offer Data. Any items not listed in those paragraphs shall be excluded from the calculation of that component.

#### **IV. ELIGIBLE COST ITEMS**

13. The following cost items shall be included in the calculation of the components of Commercial Offer Data.

##### **Eligible cost items in relation to price component**

###### Incremental fuel costs

14. Incremental fuel costs include those costs in relation to fuel that are incurred directly as a result of electricity generation, [but not those incurred in preparing the set or unit for generation (starting up)].
15. Incremental fuel costs shall be calculated in accordance with paragraph 16, using actual fuel prices.
16. The Licensee shall determine its own fuel cost calculation method, including its chosen fuel price index. The Licensee will ensure that its fuel cost calculation method, including its chosen price index, is consistent with the provisions of this Code. The Licensee may change its chosen fuel cost calculation method from time to time with the prior approval of the Regulatory Authority.
17. If the fuel cost calculation method uses a price index that is outside of the all-island market, then the fuel cost calculation can include an element to account for relevant gas transportation costs associated with shipping gas from the outside pricing hub to the relevant gas pricing point in the all-island market, based on published transportation tariffs.

###### Incremental operating costs

18. Non-fuel variable operating costs that vary with the level of output, including consumables and materials, shall be included in the price component of Commercial Offer Data. Long-term maintenance expenses shall not be included.
19. The cost of exit gas transportation capacity (**GTC**), at the point of consumption, that is required for the generation of an additional unit of output, shall be included and valued at the greater of:

- a. the amount which the Licensee would realise by disposing of the unused GTC, referenced to the day ahead price of the product on a generally accessible and liquid market; or
- b. the cost of the annual GTC product expressed on a ‘base load’ basis, whereby the annual cost of the GTC per MWh per year strip is divided by the number of hours in the calendar year to derive an hourly unit cost in €/MWh.

#### Incremental emissions costs

20. Incremental emission costs consist of the value of CO<sub>2</sub> credits, issued under the Emissions Trading Scheme established by the European Commission, that are required to cover the CO<sub>2</sub> emissions resulting from generating an incremental unit of energy (1 MWh).
21. The Licensee shall submit its incremental emissions cost as part of the price component of its Commercial Offer Data. The cost per unit of generation (MWh) is calculated as the product of the following two components:
  - a. *CO<sub>2</sub> emission rate (tonnes per unit of generation)*. This may vary by generator unit.
  - b. *Value of CO<sub>2</sub> credits (€ per tonne of CO<sub>2</sub>)*. This will be the same across the [Single Electricity Market], equal to the Emissions Trading Scheme value.

#### **Eligible cost items in relation to start-up costs component**

22. Start-up costs shall include the following to the extent directly associated with bringing the generation set or unit from shutdown conditions to the point where it can inject power into the system and shall include the following items:
  - a. *Cost of fuel required for start-up*. The fuel cost element of the start-up costs component should cover the units of fuel required to start-up the set or unit at the request of the Transmission System Operator. It should use the same calculation method as the incremental fuel costs outlined in paragraphs [14] to [17], including the same price index.



- b. *Related emissions costs.* The value of CO<sub>2</sub> credits issued under the Emissions Trading Scheme established by the European Commission multiplied by the number of units of credits required to cover the emissions resulting from the set or unit start-up. The emissions costs shall be calculated using the same parameters set out in paragraphs [20] to [21].
  - c. *Variable operating costs.* Non-fuel variable operating costs should cover those directly incurred as a result of a set or unit start-up, including consumables and materials. Licensees shall justify any such costs and obtain the Regulatory Authority's approval before such costs are included in start-up costs. Long-term maintenance expenses shall not be included in start-up costs.
  - d. *Additional labour costs.* Any additional labour costs above normal staffing conditions incurred in the process of starting-up the generation set or unit. Where the generation unit is contracted to provide availability, no additional labour start-up costs shall be included
23. Start-up costs can vary with the time the set or unit has been offline and are categorised into three temperature conditions: hot, warm and cold. Cold start represents starting up after the longest period of being offline, and therefore the longest time and/or highest cost to start-up.

**Eligible cost items in relation to no load costs component**

24. The no load cost shall include, as the starting point, the total fuel cost required to maintain zero net output at synchronous generator speed. The fuel cost shall be calculated using the same calculation method as for incremental fuel costs outlined in paragraphs [14] to [17], including the same fuel price. This estimated no load cost shall be adjusted if required to ensure that the incremental offer curve submitted by the generation set or unit is monotonically increasing. The adjusted offer curve should reflect the incremental efficiency of their generation set or unit as accurately as is possible, while respecting the constraint that offer curves be monotonically increasing.

Decremental Offers

26. Eligible cost items in respect of decremental offers shall be calculated using the same principles and methodology used to calculate those in respect of incremental offers.

#### **V. VALUATION OF COST ITEMS AT OPPORTUNITY COST**

27. Eligible cost items shall be valued at their opportunity cost calculated in accordance with the following paragraphs (**OC**) and so that a reasoned explanation of the calculation of that OC is capable of being given to the Regulatory Authority on request.
28. The OC of any cost item shall comprise the value of the benefit foregone by the Licensee in employing that cost item for the purposes of electricity generation, by reference to the most valuable realisable alternative use of that cost item for purposes other than electricity generation.
29. Unless otherwise provided in this Code of Practice, in calculating the value of the benefit foregone in employing a cost item for the purposes of electricity generation, the following principles shall, unless it can be demonstrated to the satisfaction of the Regulatory Authority that there is good cause not to, be applied:
- a. where there exists a recognised and generally accessible trading market in the relevant cost item, the OC of that item should reflect the prevailing market value or spot price of the cost item for the operating day, which may be for immediate or future delivery or use as appropriate to the circumstances of the Licensee, having regard to costs the Licensee would incur in offering that cost item for sale, or acquiring that cost item, on a recognised and generally accessible trading market; and
  - b. where no recognised and generally accessible trading market exists in the relevant cost item the OC of that item should reflect the costs which would be incurred by the Licensee in replacing that cost item, providing evidence of a minimum of three bilateral offers for the cost item.

30. All Commercial Offer Data submitted in respect of a generation set or unit are to reflect the costs relating to that generation set or unit when considered on a stand-alone basis.

**Energy, emissions or time limited units**

31. Where there is an externally-imposed constraint on: (a) the total time a generation set or unit may run; or (b) the total emissions a generation set or unit may emit over a period of time; or (c) the total amount of energy available to a generation set or unit for a period of time, price-quantity offer components may reflect the OC of the generation set or unit over that period of time. Licensees shall submit their opportunity cost methodology to the Regulatory Authority upon request with all relevant documentation including all permits that limit the operation of the set or unit and the exact nature and time period of the limit.
32. OCs may be calculated using monthly futures prices of fuel and electricity, as forecasts of fuel and electricity costs, which, together with unit characteristics and SRMC-based offers, can be used to calculate the expected margins for a set or unit during a defined future period.
33. Where an external constraint is imposed on total generation time or total emissions, OCs shall be calculated over the same period for which the externally-imposed constraint applies. For example, where an externally-imposed constraint on total generation time or total emissions applies for a one-year period, OCs shall be calculated over the same one-year period. Where the externally-imposed constraint applies to the total amount of energy available to a generation set or unit, OCs shall be calculated over the period for which the operation of the energy-limited generation unit is normally optimised. For example, if the operation of a pumped storage unit is optimised over a 24-hour horizon, then OCs shall be calculated over the same period.

**Co-generation**

34. Where the generation of electricity is associated with additional processes other than generation, the OC of generating electricity for delivery to the [Single Electricity Market] should reflect the value of the use of electricity, or heat used to generate electricity, or both, in those associated processes.

## VI. CHANGE MANAGEMENT

35. In accordance with paragraph [??] of the relevant conditions, this Code may, following consultation with the holders of generation licences and such other persons as the Regulatory Authority considers appropriate, from time to time be amended by direction.

## VII. INTERPRETATION

36. Words and expressions used in this Code and not defined shall, unless the context otherwise requires, have the same meaning as when used in the licences containing the relevant conditions [or (where appropriate) in the Single Electricity Market Trading and Settlement Code]].

37. In this document:

**“Balancing Market”** means the market operated by the Market Operator under the Trading and Settlement Code to balance continuously generation and demand on the electricity transmission systems on the island of Ireland, and provide for market-based management of System Operator actions and processes to maintain the stable and secure operation of those systems;

**“incremental fuel cost”** means the cost of each unit of fuel multiplied by the number of units of fuel required to increase generation output by one additional unit of energy (1 MWh), plus any appropriate variable costs related to handling of those units of fuel;

**“OC”** means, in relation to any eligible constituent cost item, its opportunity cost calculated in accordance with the provisions of this Code of Practice;

**“Regulatory** for the purposes of applying this Code of

**Authority”**

Practice in Ireland, means the Commission and, for the purposes of applying it in Northern Ireland, means the Authority; and

**“SRMC”**

means the short run marginal cost related to a generation set or unit in respect of an Imbalance Settlement Period calculated in accordance with the provisions of this Code of Practice.

## ANNEX B: DRAFT GENERATION LICENCE CONDITION ON BOTH OPTIONS

A draft licence condition on Balancing Market Offer Principles (BMOP), which would apply in the case of Option 1 and a draft condition on Balancing Market Offer Limits (BMOL) 2, are currently being developed. Subject to the outcome of this consultation, a separate statutory consultation will be required in relation to the appropriate form of licence condition.

A licence condition on BMOP would state that the licensee, or any person acting on its behalf, acts so as to ensure its compliance with the BMOP. The condition would not define what cost items should be included in the unit's bid, instead this detail will be contained in the relevant BMOP document.

A licence condition on BMOL would state that the licensee, or any person acting on its behalf, acts so as to ensure its compliance with the limits determined by the RAs. The condition would also require the RAs to have regard, when making those determinations, to a published statement setting out principles for the setting of such limits.

Both forms of licence condition would also state that the licensee shall retain records of each set of relevant Commercial Offer Data, and all of its supporting data relevant to the calculation of the components of its Commercial Offer Data, for a period of at least four years commencing on the date on which the relevant Commercial Offer Data are submitted to the Single Market Operation Business.

An initial draft of each form of licence condition is outlined below:

### **Form of licence condition on BMOP**

#### **Condition XX: Balancing Market Offer Principles**

1. The Licensee shall ensure that, in [formulating and submitting Commercial Offer Data to the Single Market Operation Business in the Balancing Market under the Single Electricity Market Trading and Settlement Code] (whether by the Licensee itself or by any person acting on its behalf in relation to a generation unit for which the Licensee is the licensed generator), it acts so as to ensure its compliance with the Balancing Market Bidding Principles Code of Practice.
2. The [Commission][Authority] shall publish and, following consultation with the holders of Generation Licences and such other persons as the [Commission][Authority] considers appropriate, from time to time by direction amend, a document to be known as the Balancing Market Bidding Principles Code of Practice, which:

- (a) shall apply to such categories of [Commercial Offer Data submitted into the Balancing Market] as may be specified in the Code of Practice from time to time;
- (b) shall make such provision as appears requisite to the [Commission][Authority] for the purpose of securing that such Commercial Offer Data are cost-reflective;

and the [Commission][Authority] may elect to perform the functions conferred by this paragraph jointly with the [Northern Ireland Authority for Utility Regulation][Commission for Energy Regulation].

- 3. The [Commission][Authority] may issue directions to the Licensee for the purposes of securing that the Licensee, in carrying out the activity to which paragraph 1 refers, complies with this Condition and with the Code of Practice, and the Licensee shall comply with such directions.
- 4. The Licensee shall retain records of each set of relevant Commercial Offer Data, and all of its supporting data relevant to the calculation of the components of such relevant Commercial Offer Data, for a period of at least four years commencing on the date on which the relevant Commercial Offer Data are submitted to the Single Market Operation Business.
- 5. The Licensee shall, if requested to do so by the [Commission][Authority], provide the [Commission][Authority] with:
  - (a) a reasoned explanation of its calculations in relation to any relevant Commercial Data; and
  - (b) supporting evidence sufficient to establish the consistency of those relevant Commercial Offer Data with the obligations of the Licensee under this Condition and the Code of Practice.
- 6. In any case in which relevant Commercial Offer Data are submitted to the Single Market Operation Business which are not consistent with the Licensee's obligation under paragraph 1 of this Condition, the Licensee shall immediately inform the [Commission][Authority] and provide to the [Commission][Authority] a statement of its reasons for the relevant Commercial Offer Data submitted.
- 7. The Licensee shall by 1 June in each year submit to the [Commission][Authority] a certificate, signed by at least one director on behalf of the board of directors of the Licensee, to confirm that during the period of twelve months ending on the preceding 31 March:
  - (a) it has acted independently in relation to all submissions of relevant Commercial Offer Data that have been submitted, by it or on its behalf, under the Single Electricity Market Trading and Settlement Code; and

- (b) no such submissions made by it or on its behalf have been coordinated with any other submissions made by or on behalf of another party to the Single Electricity Market Trading and Settlement Code.
8. The provisions of this Condition (other than those of this paragraph which shall come into immediate effect) shall come into effect on such day, and subject to such transitional arrangements, as the [Commission][Authority] may by discretion appoint. Different days may be so appointed for different provisions and for different purposes.
9. In this Condition:
- |  |   |
|--|---|
| <b>“Balancing Market”</b>  | means [to be developed];  |
| <b>“Balancing Market Bidding Code of Practice” or “Code of Practice”</b> | means the document of that title published by the [Commission][Authority] in accordance with paragraph 2, as it may be amended from time to time in accordance with the provisions of that paragraph; |
| <b>“Commercial Offer Data”</b>   | has the meaning given to it in the Single Electricity Market Trading and Settlement Code as it may be amended from time to time;  |
| <b>“relevant Commercial Offer Data”</b>                                  | means Commercial Offer Data falling within a category specified in the Code of Practice.  |

#### **Form of licence condition on BMOL**

##### **Condition XX: Balancing Market Offer Limits**

1. The Licensee shall ensure that, in [formulating and submitting Commercial Offer Data to the Single Market Operation Business in the Balancing Market under the Single Electricity Market Trading and Settlement Code] (whether by the Licensee itself or by any person acting on its behalf in relation to a generation unit for which the Licensee is the licensed generator), it acts so as to ensure its compliance with any Balancing Market Offer Limits Direction applicable to it.
2. The [Commission][Authority] may, following consultation with the holder or holders of the Generation Licences concerned and such other persons as the [Commission][Authority] considers appropriate, issue (and from time to time amend or reissue) one or more directions, each such direction to be known as a Balancing Market Offer Limits Direction, which:



- (a) shall apply to such holders of Generation Licences and such categories of [Commercial Offer Data submitted into the Balancing Market] as may be specified in the Direction from time to time;
- (b) shall specify a maximum or minimum value for [each of the price components of such Commercial Offer Data];
- (c) shall set out the methodology employed in calculating any maximum or minimum values so specified;
- (d) may make such other provision as appears requisite to the [Commission][Authority] for the purpose of securing that such Commercial Offer Data are consistent with the requirements of paragraph (b) above;

and the [Commission][Authority] may elect to perform the functions conferred by this paragraph jointly with the [Northern Ireland Authority for Utility Regulation][Commission for Energy Regulation].

3. The [Commission][Authority] shall publish and, following consultation with the holders of Generation Licences and such other persons as the [Commission][Authority] considers appropriate, from time to time by direction amend, a document to be known as the Balancing Market Offer Limits Statement, which:

- (a) shall set out principles according to which any methodology used for the purpose referred to in sub-paragraph 2(c) is to be produced;
- (b) shall make provision as to the periodic review of any such methodology by the [Commission][Authority];
- (c) may make such further provision as the [Commission][Authority] considers appropriate in relation to Balancing Market Offer Limits Directions;

and the [Commission][Authority] may elect to perform the functions conferred by this paragraph jointly with the [Northern Ireland Authority for Utility Regulation][Commission for Energy Regulation].

4. The [Commission][Authority] shall, in exercising its functions under paragraph 2, have regard to the Balancing Market Offer Limits Statement in force at the relevant time.

5. The [Commission][Authority] may issue directions to the Licensee for the purposes of securing that the Licensee, in carrying out the activity to which

paragraph 1 refers, complies with this Condition and with any Direction applicable to it, and the Licensee shall comply with such directions.

6. The Licensee shall retain records of each set of relevant Commercial Offer Data, and all of its supporting data relevant to the calculation of the components of such relevant Commercial Offer Data, for a period of at least four years commencing on the date on which the relevant Commercial Offer Data are submitted to the Single Market Operation Business.
7. The Licensee shall, if requested to do so by the [Commission][Authority], provide the [Commission][Authority] with:
  - (a) a reasoned explanation of its calculations in relation to any relevant Commercial Data; and
  - (b) supporting evidence sufficient to establish the consistency of those relevant Commercial Offer Data with the obligations of the Licensee under this Condition and any Direction applicable to it.
8. In any case in which relevant Commercial Offer Data are submitted to the Single Market Operation Business which are not consistent with the Licensee's obligation under paragraph 1 of this Condition, the Licensee shall immediately inform the [Commission][Authority] and provide to the [Commission][Authority] a statement of its reasons for the relevant Commercial Offer Data submitted.
9. The Licensee shall by 1 June in each year submit to the [Commission][Authority] a certificate, signed by at least one director on behalf of the board of directors of the Licensee, to confirm that during the period of twelve months ending on the preceding 31 March:
  - (a) it has acted independently in relation to all submissions of relevant Commercial Offer Data that have been submitted, by it or on its behalf, under the Single Electricity Market Trading and Settlement Code; and
  - (b) no such submissions made by it or on its behalf have been coordinated with any other submissions made by or on behalf of another party to the Single Electricity Market Trading and Settlement Code.
10. The provisions of this Condition (other than those of this paragraph which shall come into immediate effect) shall come into effect on such day, and subject to such transitional arrangements, as the [Commission][Authority]

may by discretion appoint. Different days may be so appointed for different provisions and for different purposes.

11. In this Condition:

**“Balancing Market”**

means [to be developed];

**“Balancing Market Offer Limits Direction”**  
or **“Direction”**

means the document of that title issued by the [Commission][Authority] in accordance with paragraph 2, as it may be amended or reissued from time to time in accordance with the provisions of that paragraph;

**“Commercial Offer Data”**

has the meaning given to it in the Single Electricity Market Trading and Settlement Code as it may be amended from time to time;

**“relevant Commercial Offer Data”**

means Commercial Offer Data falling within a category specified in a Direction.