

Rule Change Notice

Incentives to Improve Availability of Scheduled Generators (RC_2013_09)

This notice is given under clause 2.5.7 of the Market Rules.

Date Submitted: 18 June 2013

Submitter: Allan Dawson, IMO

The Proposal

Since the commencement of the Wholesale Electricity Market (WEM), a number of Scheduled Generators have demonstrated consistently high outage levels. These outage levels were almost entirely due to Planned Outages, for which there are no direct financial consequences under the Market Rules. The level of unavailability suggests the existing Market Rules provide inadequate incentives to Market Participants to maximise the availability of their Scheduled Generators.

This Rule Change Proposal seeks to address the issue by:

- allowing the IMO more flexibility in assigning a reduced quantity of Certified Reserve Capacity (between zero and full allocation) to Scheduled Generators that display excessive outage rates over a 36 month period;
- imposing an upper limit on the number of Trading Intervals in any 36 month period for which a generator can receive a reduction of its Reserve Capacity Obligation Quantities due to Planned Outages; and
- providing the IMO with discretion to require performance reports from a Market Participant concerning a Scheduled Generator with an excessive Planned Outage rate, regardless of the availability of total system capacity.

Appendix 1 contains the Rule Change Proposal and gives complete information about:

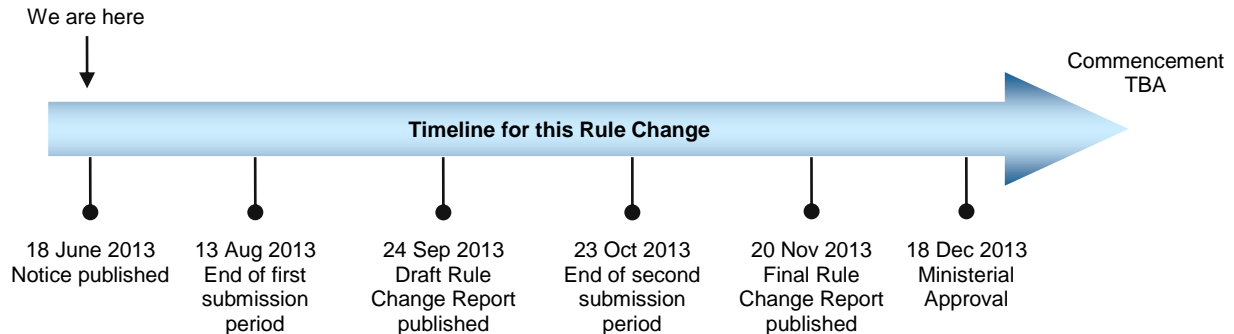
- the proposed amendments to the Market Rules;
- relevant references to clauses of the Market Rules and any proposed specific amendments to those clauses; and
- the submitter's description of how the proposed amendments would allow the Market Rules to better address the Wholesale Market Objectives.

Decision to Progress the Rule Change

The IMO has decided to progress the Rule Change Proposal on the basis that Rule Participants should be given an opportunity to provide submissions as part of the rule change process.

Timeline

The projected timelines for processing this proposal are:



Please note that, as published in the extension notice of 18 June 2013:

- the first submission period has been extended beyond the usual 30 Business Days to provide Market Participants with sufficient time to consider the proposal; and
- the period for the preparation of the Draft Rule Change Report has been extended beyond the usual 20 Business Days to allow the IMO sufficient time to consider the submissions received in the first submission period and prepare its Draft Rule Change Report.

All other dates have been adjusted accordingly.

Call for Submissions

The IMO invites interested stakeholders to make submissions on this Rule Change Proposal. The submission period is 40 Business Days. Submissions must be delivered to the IMO by **5.00pm, 13 August 2013**.

The IMO prefers to receive submissions by email (using the submission form available on the Market Web Site: <http://www.imowa.com.au/rule-changes>) to: market.development@imowa.com.au.

Submissions may also be sent to the IMO by fax or post, addressed to:

Independent Market Operator

Attn: Group Manager, Development & Capacity
PO Box 7096
Cloisters Square, PERTH, WA 6850
Fax: (08) 9254 4399



INDEPENDENT
MARKET
OPERATOR

Wholesale Electricity Market Rule Change Proposal

Rule Change Proposal ID: RC_2013_09
Date received: TBA

Change requested by:

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Organisation:	IMO
Address:	Level 17, 197 St Georges Terrace, Perth WA 6000
Date submitted:	TBA
Urgency:	2-medium
Change Proposal title:	Incentives to Improve Availability of Scheduled Generators
Market Rules affected:	Clauses 2.17.1, 4.9.9, 4.11.1, 4.11.1A (new), 4.11.1B (new), 4.11.1C (new), 4.11.1D (new), 4.11.1E (new), 4.12.6, 4.12.9 (new), 4.12.10 (new), 4.26.1A, 4.26.2, 4.27.2A (new), 4.27.3, 4.27.3A (new), 4.27.3B (new), 4.27.4, 4.27.4A (new), 4.27.5, 4.27.6, 4.27.7, 4.27.8, 4.27.9 and the Glossary.

Introduction

Market Rule 2.5.1 of the Wholesale Electricity Market Rules provides that any person (including the IMO) may make a Rule Change Proposal by completing a Rule Change Proposal Form that must be submitted to the Independent Market Operator.

This Change Proposal can be posted, faxed or emailed to:

Independent Market Operator

Attn: Group Manager, Development and Capacity
PO Box 7096
Cloisters Square, Perth, WA 6850
Fax: (08) 9254 4339
Email: market.development@imowa.com.au

The Independent Market Operator will assess the proposal and, within 5 Business Days of receiving this Rule Change Proposal form, will notify you whether the Rule Change Proposal will be further progressed.



In order for the proposal to be progressed, all fields below must be completed and the change proposal must explain how it will enable the Market Rules to better contribute to the achievement of the Wholesale Market Objectives.

The objectives of the market are:

- (a) to promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West interconnected system;
- (b) to encourage competition among generators and retailers in the South West interconnected system, including by facilitating efficient entry of new competitors;
- (c) to avoid discrimination in that market against particular energy options and technologies, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions;
- (d) to minimise the long-term cost of electricity supplied to customers from the South West interconnected system; and
- (e) to encourage the taking of measures to manage the amount of electricity used and when it is used.

Details of the Proposed Rule Change

1. Describe the concern with the existing Market Rules that is to be addressed by the proposed Market Rule change:

1.1 Background

In July 2012, the IMO noted that five Scheduled Generators in receipt of Capacity Credits since market commencement had demonstrated total outage levels of over 30% over the preceding 36 months. For three of those Facilities, this level of outages was apparent over the previous five years. Two had total outages of over 42% over four years. These outage levels were almost entirely due to Planned Outages, for which there are no direct financial consequences under the Market Rules. By contrast, Forced Outages, for which Capacity Cost Refunds must be paid, are at comparatively low levels.

Total outage levels of over 30% over a 36 month period constitute a performance level that permits the IMO to decline to assign Certified Reserve Capacity to a Facility under clause 4.11.1(h) of the existing Wholesale Electricity Market Rules (Market Rules).

While to date the IMO has not exercised this discretion, both the IMO and the Economic Regulation Authority (ERA) have expressed concern that this persistent level of low availability is inconsistent with the Wholesale Market Objectives. Analysis commissioned by the ERA showed a correlation between unexpectedly high market prices and the unavailability of these Facilities due to Planned Outages¹.

¹ ERA 2011 Annual Wholesale Electricity Market Report for the Minister of Energy – Public Version

According to statistics published by the Energy Supply Association of Australia (ESAA)², the availability factor of the Western Australian generation sector over the ten years prior to 2006 was stable in the range 85%-90%. Availability performance has deteriorated in the last five years, despite the entry of new generators with availability of well over 85% and Planned Outage factors under 10%. The ESAA statistics show that WA now has the worst overall generation availability factor (<80%) and highest Planned Outage factor (20%) in Australia.

This suggests that there are circumstances where the existing Market Rules provide inadequate incentives to Market Participants to maximise the number of Trading Intervals during which their Scheduled Generators are available to the energy markets.

The ERA has also queried whether the Reserve Capacity Mechanism may act to mask signals that would otherwise lead to the retirement of old and unreliable plant. Potentially, the existing Reserve Capacity Mechanism blunts the market signals that would be received by a high maintenance/low availability Scheduled Generator in an energy-only market. Such an effect may be most evident for written-down plant with low fixed costs where the “guaranteed” Reserve Capacity revenue means that a commercial rate of return can be earned with a low capacity factor, which in an energy-only market may trigger a retirement decision.

The implications of this situation for the South West interconnected system (SWIS) include:

- Poor value for money – customers are paying a significant amount for Reserve Capacity for which the probability of availability is low.
- Inefficiency – the unavailability, due to frequent Planned Outages, of Scheduled Generators with low short run marginal costs (SRMC) reduces competitive pressure in the Short Term Energy Market (STEM) and Balancing Market, potentially resulting in higher than necessary average energy prices.
- Higher risk – the frequent unavailability of large amounts of capacity due to Planned Outages reduces the effective reserve margin and increases the risk that a generation plant failure will result in price spikes.
- Inequity within facility class – the worst-performing generators (from an availability perspective) are receiving capacity revenue per available hour that is significantly higher than the best-performing generators³.
- Retention of inefficient and unreliable generating plant – subsidising unreliable plant with capacity payments mutes the normal commercial incentives for retirement of inefficient, unreliable or obsolete generation facilities.
- Misleading supply signals – the assignment of full Reserve Capacity to frequently unavailable Scheduled Generators may discourage investors by suggesting an apparent system reserve margin higher than the generation capacity that is actually reliably available.

The situation is inconsistent with the Wholesale Market Objectives of economically efficient, safe and reliable supply of electricity (a), encouraging competition (b), and minimising the long-term cost of electricity to customers (d).

The IMO acknowledges that Scheduled Generators require periodic testing, inspections and

² ESAA: Electricity Gas Australia, published annually.

³ For example, the capacity revenue received per Capacity Credit per available hour by the Scheduled Generators with the lowest availability in the 2010/11 and 2011/12 capacity years was \$35.49 and \$27.06 respectively, while those with the highest availability received \$16.51 and \$15.06 per Capacity Credit per available hour.

overhauls to maintain them in a reliable and efficient condition. Traditional industry practice for steam turbines has involved minor outages/overhauls (typically two to four weeks duration) every two to four years and major overhauls (typically four to eight weeks duration) every three to nine years, with allowance for the number of starts and operating hours. Gas turbines have tended to have a higher-frequency overhaul cycle. Many operators now use risk-based or condition-based maintenance strategies in which operating conditions and test results, rather than elapsed time or operating hours, dictate overhaul frequency. The aim of this approach is generally to reduce the frequency of overhauls.

The IMO also appreciates that occasionally an overhaul will reveal a previously unknown problem that requires rectification. However three or more successive years with annual Planned Outages in excess of 15 weeks is a significant variation from accepted industry practice for a commercial generator. This indicates either an extremely unreliable plant for which retirement should be a serious option, or a need to improve availability incentives.

The ERA and a number of industry stakeholders have expressed concern about the very high levels of unavailability among some large generating Facilities, the potential impact that this has on the energy markets, and whether the existing Market Rules provide an effective mechanism for ensuring the economically efficient provision of generation capacity to the SWIS.

1.2 Effect of existing Market Rules

Clause 4.11.1(h)

- (h) *the IMO may decide not to assign Certified Reserve Capacity to a Facility if:*
- i. *the Facility has operated for at least 36 months and has had a Forced Outage rate of greater than 15% or a combined Planned Outage rate and Forced Outage rate of greater than 30% over the preceding 36 months; or*
 - ii. *the Facility has operated for less than 36 months, or is yet to commence operation, and the IMO has cause to believe that over a period of 36 months the Facility is likely to have a Forced Outage rate of greater than 15% or a combined Planned Outage rate and Forced Outage rate of greater than 30%,*

where the Planned Outage rate and the Forced Outage rate for a Facility for a period will be calculated in accordance with the Power System Operation Procedure⁴. The IMO may consult with System Management in deciding whether or not to refuse to grant Certified Reserve Capacity under this clause 4.11.1(h);

The clause 4.11.1(h) threshold criteria were set at a time when the average Forced Outage factor of SWIS-connected generation was around 4% and the Planned Outage factor was approximately 10% (equating to an Availability Factor⁵ of 86%) and Availability Factors had been mostly in the range 85-92% for the previous decade. A combined outage rate of >30% over multiple years was (and still is) indicative of the worst-performing decile of thermal

⁴ The outage definitions used in the Market Rules and the outage performance indicators defined in the Power System Operation Procedure: Facility Outages are not standard industry definitions. The terms “Forced Outage rate” and “Planned Outage rate” used in the Market Rules and Power System Operation Procedure are approximately aligned to the IEEE-762 standard definitions of “Equivalent Forced Outage Factor” and “Equivalent Planned Outage Factor”. However, many outages classified as “Planned” in the WEM would be classified as “Forced” under standard industry definitions.

⁵ “Availability Factor” (and “Equivalent Availability Factor”) are standard industry performance indicators. They measure the proportion of a given operating period in which a generating unit is available without any outages.

generating plant performance by comparison with international benchmarks.

To support the IMO in making a decision under clause 4.11.1(h), it may use information provided by the applicant under clause 4.10.1 including expected (clause 4.10.1(e)(vi)) and actual (clause 4.10.1(e)(vii)) forced and unforced outage rates. Further, the Reserve Capacity Procedure for Certification of Reserve Capacity allows for the IMO to seek additional information from the applicant, including the causes of the past outages, the steps being taken by the applicant to reduce the outage rates, and the applicant's expectation of the level of future outages. The IMO may assess the likelihood that the applicant's actions will reduce the outage rates and decide whether the expected outages are likely to compromise the security and reliability of the SWIS. It may consult with System Management in making its decision under clause 4.11.1(h).

The Market Rules do not explicitly state the purpose of clause 4.11.1(h). Clause 4.11.1(h) provides no guidance to the IMO in identifying and assigning relative importance to the factors to be considered in the exercise of its discretion under this clause.

Clause 4.11.1(h) is a "go/no go" filter. The IMO has the discretion to refuse to assign any Certified Reserve Capacity to a Facility that breaches the 36 month outage rate threshold. However, if it does not exercise this discretion, it has no power to adjust the quantity of Capacity Credits to be assigned to reflect the Facility's reliability.

Clauses 4.11.1(a), (b) and (g) place upper limits on the level of Certified Reserve Capacity that the IMO may certify for a Facility, which implies that in certain circumstances a lower level may be assigned. However, there are no provisions in clause 4.11.1 or Appendix 3 of the Market Rules, or in the Reserve Capacity Procedure for Certification of Reserve Capacity, that make provision for considering outage-related availability when Certified Reserve Capacity amounts are determined for a Scheduled Generator.

Clause 4.12.3

4.12.3. The IMO must use the information described in clauses 4.10.1 and 4.25.12 to set the Reserve Capacity Obligation Quantity to apply to a Facility in each Trading Interval. The Reserve Capacity Obligation Quantity to apply to a Facility may differ between Trading Intervals.

The information provided by the applicant under clause 4.10.1 of the Market Rules includes previous and expected outage rates for the Facility as well as other restrictions on availability identified by the applicant.

In effect, the Market Rules require the IMO to consider the previous and expected outage rates of a Scheduled Generator when determining the Reserve Capacity Obligation Quantity for a Facility, but do not permit the IMO to consider outage rates when assessing the number of Capacity Credits for which it will be paid.

Clause 4.12.6(b)

(b) subject to clause 4.27.9, during Trading Intervals where there is a Consequential Outage or a Planned Outage for a Facility provided to the IMO by System Management in accordance with clause 7.3.4, the IMO must reduce the Reserve Capacity Obligation Quantity for that Facility, after taking into account any adjustments in accordance with paragraph (a), to reflect the amount of capacity unavailable due to that outage;

The effect of clause 4.12.6(b) is to grant Facilities an uncapped entitlement to have their

Reserve Capacity Obligation Quantity reduced for the Trading Intervals during which their capacity is unavailable due to Planned Outages.

This protects Market Participants from the Facility Reserve Capacity Deficit Refund which would otherwise apply under clause 4.26.1A to a Facility that fails to deliver its Reserve Capacity Obligation Quantities in any Trading Interval.

Clause 4.27.9 suspends the operation of clause 4.12.6(b) under specified circumstances for selected Facilities. The criteria for the operation of the existing clause 4.27.9 relate to total system capacity availability over an extended period, and are unlikely to be met in practice.

The protection that clause 4.12.6(b) provides for unreliable Facilities is significantly increased by the very broad definition of Planned Outages, defined in clause 3.19.11 as any outage that is approved by System Management under clause 3.19.4.

Clauses 3.18.5 and 3.18.5A allow Market Participants to submit an Outage Plan to System Management for approval up to two days prior to the proposed commencement of the Outage.

Clause 3.19.2 allows Market Participants to seek System Management's approval for unscheduled Opportunistic Maintenance with as little as one hour's notice, for an outage confined to a single Trading Day for minor maintenance that does not require changes to scheduled energy or Ancillary Services. Opportunistic Maintenance is specifically classified as a Planned Outage under clause 3.19.11.

Clause 4.27

Clause 4.27 provides the potential for greater scrutiny and intervention by the IMO regarding Facilities with excessive Planned Outage rates. The effectiveness of this clause is severely limited by being dependent on *"the number of days in the preceding 12 calendar months where the total available capacity in the SWIS dropped below 80% (during the Hot Season), and 70% (in either the Intermediate Season or Cold Season), of the total Capacity Credits held by Market Participants for more than six hours on the day"*.

If these criteria are met for more than 40 days, clause 4.27.3 obliges the IMO to require reports from Market Participants responsible for Scheduled Generators that are unavailable due to Planned Outages for more than 1,000 hours (Planned Outage rate of 11.4%) in the preceding 12 calendar months.

Under clause 4.27.4, these reports must include explanations of the Planned Outages and measures proposed by the Market Participant to increase the availability of the Facility, and a statement of the expected maximum number of Planned Outage days to be taken in each of the next 24 months, with reasons for each Planned Outage.

Clause 4.27.7 permits the IMO, at its discretion, to limit the number of Planned Outage days that may be taken in each of the next 24 months if it considers that the Market Participant's proposed level of Planned Outages is unjustified based on good industry practice. This limit does not prevent the Market Participant seeking approval from System Management for Planned Outages in excess of this limit, and only has a tangible effect if clause 4.27.9 is triggered.

Clause 4.27.9 is triggered only if the total available system capacity is reduced significantly for 80 days in the previous 12 months. This clause obliges the IMO to cease adjusting Reserve Capacity Obligation Quantities for the Scheduled Generators referred to in clause 4.27.3 once they exceed the number of days of Planned Outage predicted by the

Market Participant under clause 4.27.4(b) or determined by the IMO under clause 4.27.7. The Facility would then be exposed to the risk of being liable for Facility Reserve Capacity Deficit Refunds for Planned Outages in excess of the limit.

The IMO does not have any discretion to apply clauses 4.27.3 to 4.27.9 unless the thresholds for reduction of total system available capacity are first exceeded. The 40 day threshold has not been exceeded since the commencement of the market, and the probability of it being exceeded in the future is very low.

1.3 Proposed changes to the Market Rules

A Concept Paper was prepared and circulated to members of the Market Advisory Committee (MAC), proposing a number of options to address the issues identified above and improve incentives for Market Participants to maximise the number of Trading Intervals during which their Scheduled Generators are available in the energy markets.

An industry forum was held on 8 May 2013 to allow the expression of views from potentially affected Market Participants, and to allow for a more detailed discussion of the proposals and the issues raised at the MAC meeting. Attendees were also invited to provide written comments on the proposal to the IMO following the conclusion of the forum.

The IMO has considered the matters raised and views expressed by members of the MAC and attendees at the industry forum, and proposes to amend the Market Rules to:

- **Improve the practicality and effectiveness of Clause 4.11.1(h) by:**
 - permitting the IMO more flexibility in assigning a quantity of Certified Reserve Capacity (between zero and full allocation) to Scheduled Generators displaying excessive outage rates over 36 months;
 - specifying a range of factors for the IMO to consider in making its decision, adding certainty, structure and transparency to the process; and
 - progressively tightening the combined Planned Outage rate and Forced Outage rate thresholds that trigger clause 4.11.1(h), from 30% to 20% over five years, commencing in 2016, with corresponding changes to the Forced Outage rate threshold, with provision for review in 2018;
- **Clarify the nature of the Reviewable Decision under clause 4.9.9 by:**
 - including an explicit obligation on the IMO to decide whether to assign Certified Reserve Capacity to a Facility, and if so, the quantity to assign. Currently this decision is implicit and the clause only explicitly mentions actions that the IMO must take if it assigns Certified Reserve Capacity to a Facility. This will clarify that the IMO's decisions regarding the quantity of Certified Reserve Capacity to assign to a Facility are reviewable (as clause 4.9.9 is a Reviewable Decision), including where the IMO decides to assign a lesser quantity of Certified Reserve Capacity to a Facility under clause 4.11.1(h); and
- **Impose an upper limit on the number of Trading Intervals in any 36 month period for which a generator can claim a reduction of its Reserve Capacity Obligation Quantities due to Planned Outages.**
 - After the Facility reaches this cap, the IMO will no longer reduce the Reserve Capacity Obligation Quantity for that Facility to reflect the amount of capacity unavailable due to Planned Outages.

- The relevant Market Participant will be liable to pay Facility Reserve Capacity Deficit Refunds for subsequent Planned Outages taken by that Facility, as well as for its Forced Outages, until its total Planned Outage hours over the previous 36 months no longer exceed the cap.
- The cap will be applied over a rolling 36 month period to allow Facilities to accommodate periodic major overhauls by smoothing their Planned Outage rates over a longer period. The cap will not apply to Planned Outage hours taken before the implementation of the Rule Change.
- The proposed initial cap of 7,800 Trading Intervals (3,900 hours or 23.2 weeks) over three years is equivalent to an average annual Planned Outage Factor of 14.8%. Only nine of the existing Scheduled Generators have exceeded this figure over the last three years, and it is substantially higher than the historical rates for most Scheduled Generators. It is proposed that this cap be reviewed within five years of operation.
- Trading Intervals will not count towards the cap if no adjustment to Reserve Capacity Obligation Quantities was made and the Market Participant was required to pay a Facility Reserve Capacity Deficit Refund in relation to that Trading Interval.
- **Improve the practicality and effectiveness of Clause 4.27 by:**
 - granting the IMO discretion to require a performance report and performance improvement reports from the relevant Market Participant concerning a Scheduled Generator with an excessive Planned Outage rate, regardless of the availability of total system capacity;
 - deleting clauses 4.27.7 and 4.27.8, which become redundant as a result of the change to clause 4.12 that imposes a cap on Planned Outages for which a reduction in Reserve Capacity Obligation Quantities may be claimed; and
 - permitting the IMO to temporarily adjust the cap on the number of Trading Intervals eligible for a reduction of Reserve Capacity Obligation Quantities if the system capacity availability criterion in clause 4.27.9 is met. This is a consequential change required to maintain the intent of clause 4.27.9 in the event that the total system is under extreme capacity stress due to generator unavailability. The probability of the criterion in clause 4.27.9 being met is considered very low.

Impact on the Regulations

The IMO notes that under the Electricity Industry (Wholesale Electricity Market) Regulations 2004 (WEM Regulations):

- clauses 4.9.9 (to be amended) and 4.27.7 (to be deleted) are Reviewable Decisions; and
- clause 4.27.5 is subject to Category B civil penalties.

The IMO considers that the under the proposed Amending Rules it is still appropriate for clause 4.9.9 to be a Reviewable Decision and clause 4.27.5 to remain a Category B civil penalty provision. The IMO proposes to work with the Public Utilities Office to progress the necessary amendments to the WEM Regulations to remove clause 4.27.7 as a Reviewable Decision.

The IMO also notes that during the preparation of this Rule Change Proposal some Market Participants suggested that clause 4.27.9, as proposed to be amended by the IMO, should be made a Reviewable Decision.

2. Explain the reason for the degree of urgency:

Some Scheduled Generators have demonstrated poor availability over several years, with little indication to date that the frequent and extended Planned Outages taken over that period have improved the availability of the Facilities. Previous assurances that availability would improve for these Facilities have not been met. Incentives to change behaviour need to be put in place to discourage further deterioration in performance, and the consequential negative impact on the market.

Delays in making these changes will increase the cost to the market of the continued high level of generation unavailability.

Some of the proposed rule changes will include a transition time, to allow affected Market Participants to implement remedial measures and if necessary adjust business plans and maintenance strategies to manage the impact of the changes. Notification of the timetable for the commencement of the rule changes should be provided as soon as possible.

The currently planned timelines would enable the proposed changes to sections 4.12, 4.26 and 4.27 to take effect from the commencement of the Amending Rules (targeted for 1 January 2014), with the proposed changes to section 4.11 taking effect in the 2014 Reserve Capacity Cycle for the certification of capacity for the 2016/17 Capacity Year.

3. Provide any proposed specific changes to particular Rules: *(for clarity, please use the current wording of the Rules and place a ~~strikethrough~~ where words are deleted and underline words added)*

2.17.1. Decisions by the IMO or System Management, as applicable, made under the following clauses are Reviewable Decisions:

- (a) clause 2.3.8;
- (b) clauses 2.5.6(c) and 2.5.9;
- (c) clause_2.6.3A(a);
- (d) clause_2.7.7A(a);
- (e) clause 2.10.2A(a);
- (f) clause 2.10.13;
- (g) clause 2.10.14;
- (h) clause 2.13.28;
- (i) clause 2.28.16;
- (j) clauses 2.30.4 and 2.30.8;
- (k) clause 2.31.10;
- (l) clause 2.32.7E(b);
- (m) clause 2.34.7;
- (n) clause 2.34.7A(b)(ii);
- (o) clause 2.34.7C(c);
- (p) clause 2.34.11;

- (q) clauses 2.37.1 to 2.37.3;
- (r) clause 4.9.9;
- (s) clause 4.15.1;
- (sA) clause 4.20.11;
- (t) ~~clause 4.27.7;~~[Blank]
- (u) clause 4.28.7;
- (v) clause 7A.1.11; and
- (w) clause 10.2.1.

4.9.9. The IMO must decide whether or not to assign Certified Reserve Capacity to a Facility in respect of a Reserve Capacity Cycle, and if so, the quantity to be assigned. If the IMO decides to assigns Certified Reserve Capacity to a Facility in respect of a Reserve Capacity Cycle, the IMO must advise the applicant:

- (a) of the amount of Certified Reserve Capacity assigned to the Facility in respect of the Reserve Capacity Cycle, as determined in accordance with clause 4.11 or clause 4.9.5(c) (as applicable);
- (b) of the initial Reserve Capacity Obligations Quantity set for the Facility, as determined in accordance with clause 4.12 or clause 4.9.5(c) (as applicable);
- (c) of any Reserve Capacity Security required as a condition of a Market Participant holding the Certified Reserve Capacity, as determined in accordance with clause 4.13.2 or clause 4.9.5(c) (as applicable);
- (d) in the case of Conditional Certified Reserve Capacity, that the certification is subject to the conditions in clause 4.9.5(a) and (b);
- (e) upon the request of the applicant, of the calculations upon which the IMO's determinations are based; and
- (f) whether the IMO accepted or rejected a proposed alternative value to be used in the calculation of the Required Level for a Facility for which a Market Participant nominated to use the methodology described in clause 4.11.2(b) in its application for certification, as determined in accordance with clause 4.11.2A, if applicable.

4.11.1. Subject to clauses 4.11.7 and 4.11.12, the IMO must apply the following principles in assigning a quantity of Certified Reserve Capacity to a Facility for the Reserve Capacity Cycle for which an application for Certified Reserve Capacity has been submitted in accordance with clause 4.10:

...

- (h) subject to clauses 4.11.1B and 4.11.1C, the IMO may decide not to assign, or to assign a specified quantity of Certified Reserve Capacity to a Facility if:

- i. ~~the Facility has operated~~ been in Commercial Operation for at least 36 months and has had a Forced Outage rate of ~~greater than 15%~~ or a combined Planned Outage rate and Forced Outage rate of ~~greater than 30%~~ the applicable percentage specified in clause 4.11.1D over the preceding 36 months; or
- ii. ~~the Facility has operated~~ been in Commercial Operation for less than 36 months, or is yet to commence Commercial Operation~~operation~~, and the IMO has ~~cause to believe that over a period of the first 36 months of Commercial Operation~~ the Facility is likely to have a Forced Outage rate of ~~greater than 15%~~ or a combined Planned Outage rate and Forced Outage rate of ~~greater than 30%~~, the applicable percentage specified in clause 4.11.1D,

where the Planned Outage rate and the Forced Outage rate for a Facility for a period will be calculated in accordance with the Power System Operation Procedure. ~~The IMO may consult with System Management in deciding whether or not to refuse to grant Certified Reserve Capacity under this clause 4.11.1(h);~~

...

4.11.1A. The IMO must publish the reasons for a decision made under clause 4.11.1(h) on the Market Web Site to the extent those reasons do not contain any confidential information.

4.11.1B. In making a decision under clause 4.11.1(h), the IMO may:

- (a) seek such additional information from the relevant Market Participant that the IMO considers is relevant to the exercise of its discretion;
- (b) use information provided in reports related to the Facility submitted by:
 - i. the Market Participant under clauses 4.27.3 or 4.27.3A; and
 - ii. another person under clause 4.27.6; and
- (c) consult with:
 - i. System Management; and
 - ii. any person the IMO considers suitably qualified to provide an opinion on issues relevant to the exercise of the IMO's discretion.

4.11.1C. In making a decision under clause 4.11.1(h), the IMO must:

- (a) consider the extent to which the Reserve Capacity that can be provided by the Facility is necessary to meet the Reserve Capacity Target;
- (b) consider whether the Reserve Capacity provided by the Facility is of material importance to the SWIS, having regard to:
 - i. the size of the Facility;
 - ii. the operational characteristics of the Facility;

- iii. the extent to which the Facility contributes to the security of the system through fuel diversity or location; and
- iv. the demonstrated reliability of the Facility;
- (c) assess the effectiveness of strategies undertaken by the applicant in the previous three years to reduce outages, and consider the likelihood that strategies proposed by the applicant to maximise the availability of the Facility in the relevant Capacity Cycle will be effective;
- (d) consider whether a decision to not assign Certified Reserve Capacity to the Facility is likely to result in a material decrease in competition in at least one market;
- (e) consider any positive or negative impacts on the long term price of electricity supplied to consumers that might arise if Certified Reserve Capacity was not assigned to the Facility;
- (f) consider any other matter the IMO determines to be relevant; and
- (g) be satisfied that its decision under clause 4.11.1(h) would not, on balance, be contrary to the Wholesale Market Objectives.

4.11.1D. The relevant outage criteria to apply under clause 4.11.1(h) in a particular Capacity Year is as set out in the following table:

<u>For IMO decisions related to the Capacity Year</u>	<u>Forced Outage rate greater than</u>	<u>Combined Planned Outage rate and Forced Outage rate greater than</u>
<u>Prior to 2016/17</u>	<u>15%</u>	<u>30%</u>
<u>2016/17</u>	<u>14%</u>	<u>28%</u>
<u>2017/18</u>	<u>13%</u>	<u>26%</u>
<u>2018/19</u>	<u>12%</u>	<u>24%</u>
<u>2019/20</u>	<u>11%</u>	<u>22%</u>
<u>2020/21 onwards</u>	<u>10%</u>	<u>20%</u>

4.11.1E. The IMO must undertake a review, to be completed by 31 December 2018, of the operation of clause 4.11.1(h) in which it must consider the appropriate thresholds under clause 4.11.1D for Capacity Years after 2020/2021. The review must include, at a minimum, an assessment of:

- (a) the availability performance of the generation sector in the Wholesale Electricity Market compared with analogous generating plant in other markets, using Industry Standard Generation Performance Indicators for benchmarking;
- (b) the number of Facilities in the SWIS to which the criteria in clause 4.11.1(h) have applied in each of the previous five Capacity Years; and

(c) the impact on the Wholesale Electricity Market of decisions made by the IMO under clause 4.11.1(h) in the previous five Capacity Years.

4.12.6. Subject to clause 4.12.7, any initial Reserve Capacity Obligation Quantity set in accordance with clauses 4.12.4, 4.12.5, 4.28B.4, or 4.28C.4 is to be reduced once the Reserve Capacity Obligations take effect, as follows:

...

(b) ~~subject to clause 4.27.9, during Trading Intervals where there is a Consequential Outage or a Planned Outage for a Facility provided to the IMO by System Management in accordance with 4.12.9, where System Management notifies the IMO of a Planned Outage or Consequential Outage for a Facility under clause 7.3.4, the IMO must reduce the Reserve Capacity Obligation Quantity for that Facility, after taking into account any adjustments in accordance with paragraph (a), clause 4.12.6(a), to reflect the amount of capacity unavailable due to that outage; and~~

...

4.12.9. The IMO must not reduce the Reserve Capacity Obligation Quantity of a Facility for a Trading Interval under clause 4.12.6(b) in respect of a Planned Outage, if this would result in the RCOQ Reduced Planned Outage Count for that Facility over the 36 months up to and including the Trading Interval exceeding 7800.

4.12.10. The IMO must undertake a review, to be completed by 31 December 2018, of whether the limit for the RCOQ Reduced Planned Outage Count referred to in clause 4.12.9 should be altered to better meet the Wholesale Market Objectives.

4.26.1A. The IMO must calculate the Reserve Capacity Deficit refund for each Facility (“**Facility Reserve Capacity Deficit Refund**”) for each Trading Month *m* as the lesser of:

(a) the sum over all Trading Intervals *t* in Trading Month *m* of the product of:

i the Off-Peak Trading Interval Rate or Peak Trading Interval Rate determined in accordance with the Refund Table applicable to Trading Interval *t*; and

ii the Reserve Capacity Deficit in Trading Interval *t*,

where the Reserve Capacity Deficit for a Facility is equal to whichever of the following applies:

iii. if the Facility is required to have submitted a Forced Outage under clause 3.21.4, or has taken a Non-RCOQ Adjusted Planned Outage, the total Forced Outage and Non-RCOQ Adjusted Planned Outage in that Trading Interval measured in MW; or

...

4.26.2. The IMO must determine the net STEM shortfall (“Net STEM Shortfall”) in Reserve Capacity supplied by each Market Participant *p* holding Capacity Credits

associated with a generation system in each Trading Interval t of Trading Day d and Trading Month m as:

$$SF(p,m,d,t) = \text{Max}(\text{RTFO}(p,d,t), \text{RCOQ}(p,d,t) - A(p,d,t)) - \text{RTFO}(p,d,t)$$

Where:

$$A(p,d,t) = \text{Min}(\text{RCOQ}(p,d,t), \text{CAPA}(p,d,t));$$

$\text{RCOQ}(p,d,t)$ for Market Participant p and Trading Interval t of Trading Day d is equal to:

- (a) the total Reserve Capacity Obligation Quantity of Market Participant p 's unregistered facilities that have Reserve Capacity Obligations, excluding Loads that can be interrupted on request; plus
- (b) the sum of the product of:
 - i. the factor described in clause 4.26.2B as it applies to Market Participant p 's Registered Facilities; and
 - ii. the Reserve Capacity Obligation Quantity for each Facility, for all Market Participant p 's Registered Facilities, excluding Demand Side Programmes,

$\text{CAPA}(p,d,t)$ is for Market Participant p and Trading Interval t of Trading Day d :

- (c) equal to $\text{RCOQ}(p,d,t)$ for a Trading Interval where the STEM Auction has been suspended by the IMO in accordance with clause 6.10;
- (d) subject to clause 4.26.2(c), for the case where Market Participant p is not Verve Energy, the sum of:
 - i. the Reserve Capacity Obligation Quantities in Trading Interval t of that Market Participant's Interruptible Loads; plus
 - ii. the MW quantity calculated by doubling the net MWh quantity of energy sent out by Facilities registered by that Market Participant during that Trading Interval calculated as the Net Contract Position less the shortfall as indicated by the applicable Resource Plan; plus
 - iiA. if a STEM submission does not exist for that Trading Interval, the MW quantity calculated by doubling the total MWh quantity of energy to be consumed by that Market Participant including demand associated with any Interruptible Load, but excluding demand associated with any Dispatchable Load during that Trading Interval as indicated by the applicable Resource Plan; plus
 - iii. the MW quantity calculated by doubling the total MWh quantity covered by the STEM Offers which were not scheduled and the STEM Bids which were scheduled in the

- relevant STEM Auction, determined by the IMO for that Market Participant under clause 6.9 for Trading Interval t, corrected for Loss Factor adjustments so as to be a sent out quantity in accordance with clause 4.26.2A; plus
- iv. double the total MWh quantity to be provided as Ancillary Services as specified by the IMO in accordance with clause 6.3A.2(e)(i) for that Market Participant corrected for Loss Factor adjustments so as to be a sent out quantity in accordance with clause 4.26.2A; plus
 - v. the greater of zero and $(BSFO(p,d,t) - RTFO(p,d,t))$; and
- (e) subject to clause 4.26.2(c), for the case where Market Participant p is Verve Energy, the sum of:
- i. the sum of the Reserve Capacity Obligation Quantities in Trading Interval t of that Market Participant's Interruptible Loads; plus
 - ii. the MW quantity calculated by doubling the total MWh quantity of the Net Contract Position quantity of that Market Participant for Trading Interval t, corrected for Loss Factor adjustments so as to be a sent out quantity in accordance with clause 4.26.2A; plus
 - iii. the MW quantity calculated by doubling the total MWh quantity of the STEM Offers which were not scheduled and the STEM Bids which were scheduled in the relevant STEM Auction, determined by the IMO for that Market Participant under clause 6.9 for Trading Interval t, corrected for Loss Factor adjustments so as to be a sent out quantity in accordance with clause 4.26.2A; plus
 - iv. double the total MWh quantity to be provided as Ancillary Services as specified by the IMO in accordance with clause 6.3A.2(e)(i) for Verve Energy corrected for Loss Factor adjustments so as to be a sent out quantity in accordance with clause 4.26.2A; plus
 - v. the greater of zero and $(BSFO(p,d,t) - RTFO(p,d,t))$.

$BSFO(p,d,t)$ is the total MW quantity of Forced Outage and Non-RCOQ Adjusted Planned Outage associated with Market Participant p before the STEM Auction for Trading Interval t of Trading Day d, where this is the sum over all the Market Participant's Registered Facilities of the lesser of the Reserve Capacity Obligation Quantity of the Facility for Trading Interval t and the sum of the MW Forced Outage and MW Non-RCOQ Adjusted Planned Outage of the Facility for Trading Interval t as provided to the IMO by System Management in accordance with clause 7.3; and

RTFO(p,d,t) is the total MW quantity of Forced Outage and Non-RCOQ Adjusted Planned Outage associated with Market Participant p in real-time for Trading Interval t of Trading Day d, where this is the sum over all the Market Participant's Registered Facilities of the lesser of the Reserve Capacity Obligation Quantity of the Facility for Trading Interval t and the sum of the MW Forced Outage and MW Non-RCOQ Adjusted Planned Outage of the Facility for Trading Interval t as provided to the IMO by System Management in accordance with clause 7.13.1A(b).

4.27.2A. By the twenty fifth day of each month, the IMO must assess the number of Equivalent Planned Outage Hours taken in the preceding 12 calendar months by each Facility assigned Capacity Credits for the current Capacity Year.

4.27.3. If the number of days determined in accordance with clause 4.27.2 exceeds 40, then the IMO must require reports to be filed by those Market Participants holding Capacity Credits for each Facility which:

- (a) ~~has been unavailable due to Planned Outages for more than 1000 hours~~ taken more than 1000 Equivalent Planned Outage Hours during the preceding 12 calendar months; and
- (b) has not been included in such a report during the preceding 12 calendar months.

4.27.3A. If the number of Equivalent Planned Outage Hours for a Facility, as determined under clause 4.27.2A, exceeds 1750 hours for the preceding 12 calendar months, the IMO may require the Market Participant holding Capacity Credits for that Facility to provide to the IMO:

- (a) an explanatory report as described in clause 4.27.4; and
- (b) performance improvement reports at specified intervals (not more frequently than once per quarter) on the effectiveness of measures being taken by the Market Participant to improve the availability of the Facility.

4.27.3B. In making its decision whether to require a report under clause 4.27.3A, the IMO must assess whether the number of Equivalent Planned Outage Hours taken by the Facility in the previous 12 months was attributable to a specific, infrequent occurrence or is indicative of an underlying performance deficiency, and may consider any matters it considers relevant in making this assessment. The IMO may consult System Management in deciding whether or not to require a report.

4.27.4. The reports described in clause 4.27.3 and 4.27.3A(a) must include:

- (a) explanations of all Planned Outages taken by the Facility in the preceding 12 calendar months;
- (b) a statement of the expected maximum number of days of Planned Outages to be taken by the Facility in each of the next ~~24~~ 36 months commencing from the month in which the report is requested, including adequate explanation to make clear the reason for each Planned Outage; ~~and~~

- (bA) the relationship of the Planned Outages to the long term asset management strategy and established maintenance plan for the Facility;
- (c) measures being undertaken or proposed by the Market Participant to increase the availability of the Facility, and their actual and anticipated effect on the frequency of Planned Outages; and
- (d) any other information concerning the availability of the Facility that the IMO may request.

4.27.4A. The reports described in clause 4.27.3A(b) must include:

- (a) descriptions of the measures proposed, being undertaken or already undertaken by the Market Participant to increase the availability of the Facility;
- (b) the target and actual availability and reliability of the Facility as measured by Industry Standard Generation Performance Indicators; and
- (c) explanation of any variation between expected and actual improvement of the availability of the Facility as a result of the measures taken.

4.27.5. A Market Participant must:

- (a) provide a report described in clause 4.27.3 or clause 4.27.3A(a) to the IMO in a format specified in the Reserve Capacity Procedure within 20 Business Days of being requested to do so; and
- (b) provide a report described in clause 4.27.3A(b) to the IMO in a format specified in the Reserve Capacity Procedure by the time specified by the IMO under clause 4.27.3A(b).

4.27.6. The IMO must consult with System Management on the implications of ~~the~~ a report provided under clause 4.27.5, and may also consult, at the Market Participant's expense, with any person the IMO considers suitably qualified to provide an opinion on the report. The IMO may ask the person to provide an opinion on the report generally, or to limit the scope of the opinion to specified matters covered in the report.

~~4.27.7. If the IMO considers the number of days reported in accordance with clause 4.27.4(b) to be unjustified based on good industry practice it may, at its sole discretion, limit the number of days on which Planned Outages are to be taken by the Facility in each of the next 24 months for the purposes of clause 4.27.8 and 4.27.9 and must notify the Market Participant who filed the report described in clause 4.27.3 of the limit. [Blank]~~

~~4.27.8. If the IMO limits the number of days in accordance with clause 4.27.7 then the modified value is to supersede the corresponding value specified in the report described in clause 4.27.4. [Blank]~~

4.27.9. If the number of days determined in accordance with clause 4.27.2 exceeds 80 then the IMO must:

- (a) must notify all Market Participants that this has occurred; and
- (b) during the ~~12 months~~ Trading Months commencing from the first Trading Day of the following ~~month~~, Trading Month, may adjust the limit for the RCOQ Reduced Planned Outage Count specified in clause 4.12.9. ~~cease to adjust Reserve Capacity Obligation Quantities under clause 4.12.6(b) in response to Planned Outages for Facilities:~~
 - i. ~~referred to in clause 4.27.3; and~~
 - ii. ~~for which the number of days of Planned Outage during that 12 month period has exceeded the total number of days of Planned Outage predicted for that 12 month period in accordance with clause 4.27.4(b), as modified by clause 4.27.8.~~

Glossary

Equivalent Planned Outage Hours: means, in respect of a Facility, the sum of the “Planned Outage Hours” and the “Equivalent Planned Derated Hours” for the Facility as calculated in accordance with the Power System Operation Procedure.

Industry Standard Generation Performance Indicators: means the most recent edition of the IEEE Standard Definitions for Use in Reporting Electric Generating Unit Reliability, Availability, and Productivity (IEEE 762), as published by the Institute of Electrical and Electronics Engineers, or appropriate equivalent.

Non-RCOQ Adjusted Planned Outage: means a Planned Outage for which the IMO has not adjusted the Facility’s Reserve Capacity Obligation Quantity under clause 4.12.6(b).

RCOQ Adjusted Planned Outage: means a Planned Outage for which the IMO has adjusted the Facility’s Reserve Capacity Obligation Quantity under clause 4.12.6(b).

RCOQ Reduced Planned Outage Count: means, in respect of a Facility and a period of time, the sum over all Trading Intervals in that period of:

- (a) zero, if the Trading Interval occurs before 8:00 AM on 1 January 2014 or if no Capacity Credits were associated with the Facility in the Trading Interval; or
- (b) the MW quantity of RCOQ Adjusted Planned Outage for the Facility in the Trading Interval, divided by the number of Capacity Credits associated with the Facility in the Trading Interval.

4. Describe how the proposed Market Rule change would allow the Market Rules to better address the Wholesale Market Objectives:

The Reserve Capacity Mechanism is intended to serve a multiple purpose in pursuit of the Wholesale Market Objectives of economically efficient and reliable electricity supply, encouraging competition and minimising the long term cost of electricity to customers. It provides a capacity revenue stream as an incentive for the provision of competitive generation capacity to meet peak summer demand with a reserve margin (Reserve Capacity Target).

The Reserve Capacity Mechanism is designed to improve generator viability by compensating for low capacity factors attributable to market demand. It is not intended to compensate for low capacity factors attributable to operational decisions by Market Participants that result in a Scheduled Generator being unavailable for dispatch.

All generators in receipt of an allocation of Certified Reserve Capacity are expected to participate in the energy markets unless their plant is unavailable due to a Forced or necessary Planned Outage.

Scheduled Generators that are unavailable due to Forced Outages are required to pay a Facility Reserve Capacity Deficit Refund, providing an effective incentive to minimise unavailability due to Forced Outages. However, there is no corresponding incentive in the Reserve Capacity Mechanism to minimise unavailability due to Planned Outages.

Under the existing Market Rules, a Scheduled Generator may take Planned Outages as frequently as System Management is prepared to approve, without any consequential reduction in capacity revenue. System Management, appropriately, makes its decision only on the basis of whether system security might be impaired by the capacity being unavailable. When forecast demand is low relative to available capacity, approval can generally be expected.

However, the absence from the market of a Scheduled Generator with a low SRMC reduces competitive pressure. This may result in energy prices being higher than they would have been had the Facility bid into the market, and increase the risk of price spikes should an unexpected supply reduction or demand peak occur. Failing to hold Market Participants accountable for excessive Planned Outages of their Scheduled Generators results in shifting these risks to the market.

The proposed changes to sections 4.12 and 4.26 of the Market Rules will encourage Scheduled Generators to maintain plant availability at high levels by addressing this asymmetry in market incentives, while recognising the critical role that legitimate Planned Outages play in safeguarding system security and reliability.

In determining the quantity of Certified Reserve Capacity to assign to a Scheduled Generator, the existing Market Rules value Reserve Capacity on the basis of system security and reliability during hot-weather-related peak demand periods. Capacity Credits are allocated based on the reasonable expectation of the maximum summer sent-out capacity of which the Facility is capable. There is no consideration in the allocation mechanism of how frequently this capacity may be available from a Scheduled Generator (in contrast to the approach taken with Intermittent Generators).

The proposed changes to sections 4.11 and 4.27 allow the IMO to recognise the value of the availability of generation capacity in stimulating competition and efficiency in the energy market. The potential capacity available from a Scheduled Generator with chronically high outage rates may be discounted (in whole or in part) by the IMO to reflect the fact that it is available significantly less frequently than most other generators that have been allocated Certified Reserve Capacity. Scheduled Generators with availability below a certain level would therefore see a future reduction in their capacity revenue.

This would provide a strong financial signal that the impact of excessive Planned Outages on market competition and market price is considered to be inconsistent with the Wholesale Market Objectives.

Should the IMO decide under clause 4.11.1(h) not to allocate the maximum Certified Reserve Capacity to a Facility, the decision would only affect the Facility's potential capacity

revenue. The Facility remains entitled to fully compete in the energy markets in which it is eligible to participate.

Assessment against the Market Objectives

The IMO considers that the proposed amendments would better address Wholesale Market Objectives (a), (b) and (d).

(a) to promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West interconnected system.

The proposed amendments would better address Wholesale Market Objective (a) by:

- providing the IMO with the discretion to value frequently unavailable capacity lower than high-availability capacity when assigning Certified Reserve Capacity to a Scheduled Generator;
- providing for the IMO to ensure that Scheduled Generators with high outage rates or excessive Planned Outage rates do not receive a higher effective Reserve Capacity Price per available hour than Scheduled Generators with low outage rates;
- reducing incentives for Market Participants to retain inefficient, high-maintenance Scheduled Generators with poor Availability Factors;
- improving accountability for unavailability by limiting the number of Planned Outage hours that can be taken by a Facility without exposure to Facility Reserve Capacity Deficit Refunds;
- establishing a mechanism for the IMO to independently monitor the performance of individual Scheduled Generators with high outage rates, and consider that performance in assigning Certified Reserve Capacity; and
- improving the information available to the IMO in making Certified Reserve Capacity decisions under clause 4.11.1(h).

(b) to encourage competition among generators and retailers in the South West interconnected system, including by facilitating efficient entry of new competitors.

The proposed amendments would better address Wholesale Market Objective (b) by:

- better matching nominal Reserve Capacity to reliably available capacity;
- increasing the transparency of the IMO's decisions under clause 4.11.1(h); and
- reducing incentives for retention of unreliable, high-maintenance Scheduled Generators, providing greater opportunities for investment in more efficient and reliable generation plant.

(d) to minimise the long-term cost of electricity supplied to customers from the South West interconnected system.

The proposed amendments would better address Wholesale Market Objective (d) by:

- ceasing to pay the full Reserve Capacity Price for frequently unavailable capacity;
- increasing the competitive pressure on energy prices by increasing the availability of registered Scheduled Generators bidding into the energy markets;
- requiring Scheduled Generators with excessive Planned Outage rates to compensate the market for their unavailability through payment of Facility Reserve Capacity Deficit Refunds;

- closer scrutiny of the efficiency and effectiveness of Market Participants in improving the availability of their low-availability Scheduled Generators; and
- encouraging the replacement of inefficient, unreliable and high-maintenance Scheduled Generators with more efficient and reliable generating Facilities.

The IMO considers that the proposed amendments are consistent with Wholesale Market Objectives (c) and (e).

5. Provide any identifiable costs and benefits of the change:

These changes will reduce the capacity revenue earned and retained by Market Participants holding Capacity Credits for Scheduled Generators with high total outage rates, unless they take steps to reduce those outage rates. The cost incurred by Scheduled Generators with very high Planned Outage rates may be substantial. However, the Market Participant holding the Capacity Credits for those Scheduled Generators has considerable discretion concerning the level of risk, which is directly affected by its outage decisions.

Further, the changes clarify the nature of the Reviewable Decision under clause 4.9.9 (whether to assign Certified Reserve Capacity to a Facility, and if so, the quantity to be assigned). A decision by the IMO under clause 4.11.1(h) relates to the quantity of Certified Reserve Capacity to be assigned and, therefore, is within the scope of the Reviewable Decision under clause 4.9.9.

The financial cost of the proposed amendments for the market as a whole is expected to be neutral or minimal.

- Reserve Capacity Revenue refunded by Market Participants operating high-outage Scheduled Generators would be retained and redistributed within the market.
- The IMO will incur some IT costs to implement the proposed changes to clauses 4.12.6, 4.26.1A and 4.26.2.
- Some additional administrative cost for the IMO will be incurred through greater performance monitoring of individual Scheduled Generators, but this is expected to diminish as the incentives for lower Planned Outage rates take effect and fewer Facilities meet the criteria for individual reporting under clause 4.27.3A.
- Reporting costs for the Market Participants are not expected to be significant, as it is anticipated that a competent operator would already be collecting the information requested as standard asset management practice.

It is difficult to quantify the economic benefits that accrue from incentives targeting behavioural change, because the effectiveness of the incentives depends on multiple factors. These include the various market and other incentives for the affected party, the net financial impact and the Market Participants' perception of the IMO's willingness to apply sanctions.

However, the market is likely to experience a net economic benefit as a result of:

- increasing the number of available Scheduled Generators in the energy markets, increasing competition and reducing the risk of price spikes in the event of unforeseen supply interruptions;
- imposing greater accountability for poor availability performance;
- reducing subsidies to frequently unavailable Scheduled Generators;
- improving the quality of information available to the IMO to inform its decisions regarding Reserve Capacity allocation; and

- reducing perverse incentives that encourage the retention of inefficient, obsolete, unreliable and high-maintenance Scheduled Generators, leading to efficiency and competition benefits in the longer term.

All Market Participants will be better placed to monitor the value for money being provided by the Reserve Capacity Mechanism, and to identify emerging trends that may need to be addressed through market incentives.