

**ELECTRICITY INDUSTRY ACT**

**ELECTRICITY INDUSTRY (WHOLESALE ELECTRICITY  
MARKET) REGULATIONS 2004**

**WHOLESALE ELECTRICITY MARKET RULES**

**Power System Operation Procedure:  
Facility Outages**

| <b>Version history</b>            |  |
|-----------------------------------|--|
| 21 September 2006                 | Power System Operation Procedure (Market Procedure) for Facility Outages                           |
| 1 April 2009                      | System Management amended changes to the procedure resulting from Procedure Change Report PPCL0003 |
| 21 June 2011                      | System Management amended changes to the procedure resulting from Procedure Change Report PPCL0017 |
| Balancing Market Commencement Day | System Management replacement of the procedure resulting from Procedure Change Report PPCL0023     |
| 7 April 2014                      | System Management amendments to the procedure resulting from Procedure Change Report PPCL0026      |

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## RELATIONSHIP WITH MARKET RULES

1. This Power System Operation Procedure (PSOP): Facility Outages (Procedure) has been developed in accordance with, and should be read in conjunction with, the Wholesale Electricity Market Rules (Market Rules).
2. References to particular Market Rules within the Procedure in bold and square brackets **[MR XX]** are current as at 7 April 2014. These references are included for convenience only, and are not part of this Procedure.
3. This Procedure is subservient to the Market Rules. In the event of conflict between this Procedure and the Market Rules or any other document, the order of precedence is as set out in the Market Rules **[MR 1.5.2]**.
4. This Procedure may include explanatory text, including quotations from the Market Rules. Such explanatory text is for information only, does not form part of the Procedure, and is italicised and contained in a rectangular box.
5. A word or phrase defined in the Electricity Industry Act 2004, or in the Regulations or Market Rules made under that Act, has the same meaning when used in this Procedure.

## RELATED DOCUMENTS

1. This Procedure is related to, and should be read in conjunction with, the following:
  - a. PSOP: Communications and Control;
  - b. PSOP: Commissioning and Testing;
  - c. PSOP: Power System Security; and
  - d. Market Procedure: IMS Interface.

## COMMENCEMENT

1. This revised Procedure has effect from 7 April 2014.

## 1 SCOPE

1. This Procedure has been developed in accordance with the Market Rules **[MR 3.18.21, 3.19.14, 3.21.12 and 4.11.1(h)]** and details the processes to be followed by:
  - a. System Management, the IMO, Market Participants and Network Operators when planning for an outage of a Network, Market Generator, Load or an Ancillary Service Facility;
  - b. System Management, Market Participants and Network Operators when conducting final approval of outages;
  - c. System Management, Market Participants and Network Operators when determining and reporting Forced Outages and Consequential Outages; and
  - d. The IMO when calculating Planned Outage and Forced Outage rates.
2. This Procedure includes details of the processes:
  - a. that enable Market Participants and Network Operators to gain agreement with System Management on the timing of outages of Facilities;
  - b. to resolve possible conflicts between Outage Plans of different Rule Participants; and
  - c. to assist System Management in the management of Power System Security.

## 2 COMMUNICATIONS AND CONTACTS

### 2.1 Rule Participant Contacts

1. Depending on the circumstances, System Management may communicate directly with affected Market Participants and Network Operators or request affected Market Participants and Network Operators to seek resolution of Outage Plan conflicts amongst themselves.
2. Market Participants and Network Operators must provide System Management with the communication details of the operating person(s) authorised to submit Outage Plans and request cancellations of Planned Outages for each of their Facilities.
3. System Management must maintain a record of details as advised in Paragraph 2.1.2 and make them available to Market Participants and other involved parties on an as needed basis.

### 2.2 System Management Contacts

1. System Management must from time to time advise Market Participants and Network Operators of its contact details and modes of communication in respect of outages.

## 2.3 Communication of outage information

1. Communication of outage requests and notifications shall be made through System Management's Market Information Technology System ("SMMITS") web interface as soon as practicable, unless otherwise set out in this Procedure.
2. Where this Procedure requires a Rule Participant to provide confirmation in SMMITS of a request or notification made using an alternative communication method, the Rule Participant must record that confirmation in SMMITS as soon as practicable after making the relevant request or notification.
3. During periods when SMMITS is unavailable Rule Participants must provide any requests and notifications required to be communicated through SMMITS under this Procedure by an alternative communication method defined in the PSOP: Communications and Control Systems or as otherwise directed by System Management.
4. When SMMITS becomes available again after a period during which it has been unavailable, Rule Participants must update SMMITS as soon as practicable to record any requests and notifications provided under Paragraph 2.3.3.

## 3 SWIS EQUIPMENT LIST

*Market Rules [MR 3.18.2(a) & (b)] require System Management to compile and maintain a list of all equipment in the SWIS that is subject to outage scheduling by System Management.*

### 3.1 Content of the equipment list

1. In addition to the requirements of the Market Rules [MR 3.18.2(c)] the list of equipment must include:
  - a. All network circuits that could affect the output from a generating Facility during a Planned Outage of that circuit; and
  - b. All Synergy generating facilities; and
  - c. All Non-Synergy generating facilities with output ratings in excess of 10MW; and
  - d. Any Facilities contracted to provide Ancillary Services that are not covered by the above.
2. Market Generators and Loads with a name plate capacity rating less than 10MW may be included in the equipment list, where outage scheduling is required for the maintenance of Power System Security and Power System Reliability, as specified in the Market Rules [MR 3.18.2A].
3. System Management must consider the following factors in making a decision as to whether to include or exclude a piece of equipment on the list:

- a. The safety of equipment, personnel and the public; and
  - b. Power System Security and Power System Reliability.
4. System Management must update the equipment list as soon as practicable after new equipment that is required to be subject to outage scheduling is added to the SWIS **[MR 3.18.2(b)]** and provide the revised equipment list to the IMO as soon as practicable **[MR 3.18.2(e)]**.
  5. Notwithstanding Paragraph 3.1.4, System Management must review the equipment list at least once every six months to determine if any updates are required.
  6. Where following the review referred to in Paragraph 3.1.5, System Management determines that an update to the equipment list is necessary it must complete the required updates and provide the revised equipment list to the IMO as soon as practicable **[MR 3.18.2(e)]**.

### **3.2 Reconsideration of items on the equipment list**

1. A Market Participant or Network Operator may request that the Independent Market Operator reassess the inclusion or exclusion of its Facility or item of equipment on the list in accordance with the Market Rules **[MR 3.18.3]**.
2. Before requesting the IMO to conduct a reassessment under Paragraph 3.2.1 a Market Participant or Network Operator may initially contact System Management to discuss the inclusion or exclusion of its Facility or item of equipment on the list.

## **4 OUTAGE SCHEDULE**

*The requirements for System Management to maintain an outage schedule, containing information on all Scheduled Outages are specified in the Market Rules **[MR 3.18.4]**.*

1. The outage schedule must contain a list of all accepted and approved outages.
2. The outage schedule must contain the identity of the item of equipment and the planned starting and completion times of each Outage Plan accepted by System Management, up to three years ahead.

*The Market Rules **[MR 3.18.5D]** specify that System Management may disclose information from the outage schedule to a Network Operator to coordinate outage timings.*

## **5 OUTAGE PLANS**

### **5.1 Outage Plan**

1. Market Participants and Network Operators must submit requests for acceptance of Outage Plans through SMMITS.

2. System Management must accept an Outage Plan that:
  - a. contains the information specified in the Market Rules **[MR 3.18.6]**; and
  - b. is submitted in accordance with the requirements of this Procedure; and
  - c. meets the criteria for evaluating Outage Plans specified in the Market Rules **[MR 3.18.11]**.
3. System Management may require the Market Participant to clarify or provide additional information in relation to an accepted Outage Plan prior to approval of the Outage Plan.

## 5.2 Changes to an Outage Plan

*The requirements for Market Participants or Network Operators to revise plans to remove from service or de-rate an item of equipment are specified in the Market Rules **[MR 3.18.8 and MR 3.18.9]**.*

1. A Market Participant or Network Operator wishing to withdraw an Outage Plan pursuant to the Market Rules **[MR 3.18.8]** must:
  - a. if the Outage is scheduled to commence within 24 hours, as soon as practicable notify System Management by telephone and provide confirmation through SMMITS; or
  - b. otherwise, as soon as practicable inform System Management through SMMITS.
2. A Market Participant or Network Operator may request to change times in an approved Outage Plan so long as the change does not extend the Outage beyond the approved period and pursuant to the Market Rules **[MR 3.18.9]** must:
  - a. if the Outage is scheduled to commence within 24 hours, as soon as practicable notify System Management by telephone and provide confirmation through SMMITS; or
  - b. otherwise, as soon as practicable inform System Management through SMMITS.

Note that it is the Market Participant's responsibility to ensure their Balancing Submissions are consistent with their Outage Plans at all times.

## 5.3 Outage Plans lodged within the final six weeks

*The requirements applying to an Outage Plan first submitted within 6 weeks of the commencement time of the outage are specified in the Market Rules **[MR 3.18.7A]**.*

1. In assessing whether to reject an Outage Plan **[MR 3.18.7A]**, System Management must take into account:
  - a. If the Outage Plan arises from a need to carry out relatively urgent and unforeseen maintenance on its Facility or item of equipment,

when the Market Participant or Network Operator became aware of the need; and

- b. Whether the nature of the work to be carried out on the Facility or item of equipment makes it difficult to plan times accurately in advance, or the work is contingent on actions outside the control of the Market Participant or Network Operator.
2. When System Management is unable to assess an Outage Plan in the time available, System Management may reject the Outage Plan and require the Market Participant or Network Operator to resubmit the Outage Plan.

#### **5.4 Grouping of Associated Outage Plans**

*The requirements for Market Participants and Network Operators to coordinate outages are specified in the Market Rules [MR 3.18.5C].*

1. In the situation where a close interdependency exists between outages on multiple Facilities or items of equipment, System Management may assess the associated Outage Plans together and may approve, review or reject the group as a whole.

### **6 ACCEPTANCE OF OUTAGE PLANS**

#### **6.1 Assessment of Outage Plans**

1. System Management must use reasonable endeavours to respond to a request for a proposed Outage Plan received from a Market Participant or Network Operator within 10 Business Days of receipt of a generation Outage Plan and within 20 Business Days of receipt of a network Outage Plan.
2. System Management must take all reasonable steps to expedite assessments of all submitted Outage Plans.

#### **6.2 Adequacy criteria for assessing the acceptability of Outage Plans**

1. System Management must assess the acceptability of Outage Plans using the criteria specified in the Market Rules **[MR 3.18.11 (a) to (d) & MR 3.18.12]**, based on the information specified in the PSOP: Power System Security.
2. Acceptance by System Management of an Outage Plan must be based on the 2nd standard deviation (SD) PASA load forecast as specified in the Market Rules **[MR 3.18.11(a)]**.

*Due to the fact that, during summer, the 2nd SD of the weather adapted load forecast may exceed the 2nd SD of the PASA load forecast, an outage in the summer period is only accepted conditionally. However, this does not imply that the outage can or will be approved. Due to the variability of summer loads the final assessment is normally carried out 2 days prior to the scheduled outage commencement. This is because the assessment must be based on the more reliable weather-corrected load*

*forecast. To increase the likelihood of approval, Market Participant's are advised to plan long duration outages to occur outside of the summer months, which are typically from the beginning of December to the end of March.*

*System Management may find an Outage Plan to be acceptable, acceptable under some circumstances, or not acceptable. The actions System Management is required to take in each case are specified in the Market Rules [MR 3.18.13].*

### **6.3 Criteria for selection of Outage Plans in the event of conflicting Outage Plans**

*System Management must adhere to the criteria for the selection and prioritisation of Outage Plans as specified in the Market Rules [MR 3.18.14].*

1. System Management must notify all affected Market Participants and Network Operators of any decision made [MR 3.18.14] via SMMITS and must use reasonable endeavours to confirm its decision by telephone.

### **6.4 Acceptance of non-complying Outage Plan for reasons of System Security**

*The Market Rules provide for System Management to permit an Outage Plan to proceed even if it does not meet the criteria for acceptance as specified in the Market Rules [MR 3.18.11(e)].*

*This situation could, for example, arise in relation to outages intended to address ongoing plant unreliability.*

1. Where an Outage Plan does not meet the criteria for acceptance specified in Paragraph 6.2.1 [MR 3.18.1(a) to (d)] System Management may still accept the Outage Plan if it considers that the increased security risk over the period of the outage is less than the longer-term risk reduction that would be achieved by allowing the outage to go ahead [MR 3.18.11(e)].
2. If System Management accepts an Outage Plan pursuant to Paragraph 6.4.1, System Management must document its estimation of the extent of the risk including the likelihood and consequences, and ongoing advantages that arise over the longer term, as a result of accepting an Outage Plan.

## **7 CHANGES TO POWER SYSTEM CONDITIONS AFFECTING SCHEDULED OUTAGES**

1. Where System Management's forecast of power system conditions for a period coinciding with an Outage Plan occurs, such that the Outage Plan would no longer meet the criteria for acceptance, System Management may withdraw its acceptance of the Outage Plan and either deem that the Outage Plan is unacceptable, or deem that the Outage Plan is acceptable under certain circumstances.

2. Where System Management withdraws its acceptance of an Outage Plan, it must as soon as practicable notify the relevant Market Participant or Network Operator of its decision by telephone and confirm its decision via SMMITS.

## 8 PRE-ACCEPTED OUTAGES

1. A Market Participant may request the acceptance of an Outage Plan by telephone no earlier than 8:00 am on the seventh day prior to the Trading Day on which the Outage is proposed to commence ('Pre-Accepted Outage').
2. System Management may accept a request made in accordance with Paragraph 8.1 if it considers there is a likelihood that the Outage can be approved.
3. If System Management accepts a Pre-Accepted Outage then the Market Participant must confirm the details of the Outage Plan and request approval in SMMITS as soon as practicable but no later than 10:00 am on the second day prior to the Trading Day on which the Pre-Accepted Outage is proposed to commence.
4. For avoidance of doubt, a Market Participant will not be considered to have complied with Paragraph 8.3, unless:
  - a. the Market Participant has first complied with Paragraph 8.1; and
  - b. System Management has accepted the request pursuant to Paragraph 8.2.
5. Where a request for approval has been made in accordance with Paragraph 8.3, System Management must apply the approval framework in accordance with Section 9 of this Procedure.
6. System Management must not approve a request for approval made under Paragraph 8.3 unless it has first accepted the request by telephone in accordance with Paragraph 8.2.

## 9 APPROVAL OF SCHEDULED OUTAGES

*The requirements for a Market Participant or Network Operator to request approval of a Scheduled Outage are specified in the Market Rules [MR 3.19.1].*

*The criteria that System Management must adhere to when assessing whether to grant approval of Scheduled Outage requests are specified in the Market Rules [MR 3.19.6].*

1. A Market Participant or Network Operator must request, and receive notice of, approval of an accepted Outage Plan via SMMITS prior to conducting the Outage referred to in the Outage Plan.
2. Where a Market Participant requires an approval of an outage earlier than the two days in advance as specified in the Market Rules [MR 3.19.1], the

Market Participant may raise a request to System Management. System Management must assess each such request on its own merits.

3. At the time the application is made under Paragraph 9.1 the Market Participant or Network Operator must also notify System Management of any change to the information contained in the Outage Plan originally provided to System Management.
4. Notification by System Management of either an approval or rejection of a Scheduled Outage must be made via SMMITS.

*System Management would consider fuel in evaluating an Outage Plan only when there is known shortage of fuel to the extent that it may impact on the availability of generators and the security of the system. The fuel shortage can be due to restrictions arising from supply or transportation. When this happens, System Management would confirm the feasibility of its dispatch plans with the relevant Market Participants. Where the Market Participant confirms the loss of generation due to fuel, System Management would simulate accordingly in the PASA.*

## 10 OPPORTUNISTIC MAINTENANCE

*Opportunistic Maintenance refers to approved outages that are carried out without previously having been subject to Acceptance. Applications for Opportunistic Maintenance generally carry a lower probability of approval because more of the factors governing power system security are 'locked in' by the time such an application is made.*

*The requirements for a Market Participant or Network Operator to request approval of Opportunistic Maintenance are specified in the Market Rules **[MR 3.19.2(a)]** ("day-ahead opportunistic maintenance") and **[MR 3.19.2(b)]** ("on the day Opportunistic Maintenance"). System Management must have regard to the requirements in the Market Rules **[MR 3.19.3A]** in assessing whether to grant a request for Opportunistic Maintenance.*

*The criteria that System Management must adhere to when assessing whether to grant approval for Opportunistic Maintenance requests are specified in the Market Rules **[MR 3.19.6]**.*

### 10.1 Opportunistic Maintenance

1. Before approving an Opportunistic Maintenance request, System Management may at its sole discretion require a Market Participant's or Network Operator's authorised personnel included in the relevant contact list to make a written declaration that the capacity for which Opportunistic Maintenance is being sought is available prior to the outage commencing. System Management must reject any Opportunistic Maintenance request where the relevant Market Participant or Network Operator does not comply with such a request.

*Paragraph 10.1.1, relates to System Management's right under the Market Rules **[MR 3.19.3A(c)]** to reject an outage request that it considers to be made principally to avoid exposure to Reserve Capacity refunds.*

## 10.2 Day-ahead Opportunistic Maintenance

1. A Market Participant or Network Operator seeking to request day-ahead Opportunistic Maintenance must submit the request via SMMITS.
2. Requests for approval of day-ahead Opportunistic Maintenance can only be made at any time between 10:00 am on the day prior to the Scheduling Day and 10:00 am on the Scheduling Day for that Trading Day, where the request relates to an outage to occur at any time and for any duration during the following Trading Day **[MR 3.19.2(a)]**.

*Requests for day-ahead Opportunistic Maintenance in relation to Paragraph 10.2.2 must not span two consecutive Trading Days **[MR 3.19.3A(b)]**.*

3. Requests for approval of day-ahead Opportunistic Maintenance must be processed as follows:
  - a. Applications made between 10:00 am and 3:30 pm on the day prior to the Scheduling Day must be approved or rejected by 8:00 am on the Scheduling Day; or
  - b. Applications made between 3:30 pm on the day prior to the Scheduling Day and 6:00 am on the Scheduling Day must be approved or rejected by 8:00 am on the Scheduling Day subject to staff availability, and in any case by 12:00 pm on the Scheduling Day; or
  - c. Applications made between 6:00 am and 10:00 am on the Scheduling Day must be approved or rejected by 12:00 pm on the Scheduling Day.

*The time required for processing day-ahead Opportunistic Maintenance requests varies depending on the complexity of the assessment required. Participants are encouraged to allow as much time as possible as System Management must reject requests that cannot be assessed in the time available.*

4. System Management must not approve a request for a day-ahead Opportunistic Maintenance after 12:00 pm on the Scheduling Day.
5. System Management must as soon as practicable provide confirmation of its approval or rejection of a day-ahead Opportunistic Maintenance request via SMMITS.

## 10.3 On the day Opportunistic Maintenance

1. A Market Participant or Network Operator seeking to request Opportunistic Maintenance at any time on the Trading Day must:
  - a. make an application for the approval of an on the day Opportunistic Maintenance request by telephone at least one hour before the commencement of the Trading Interval during which the requested outage is due to commence **[MR 3.19.2(b)]**; and
  - b. as soon as practicable, confirm the request via SMMITS.

The effect of the Market Rules **[MR 3.19.2(b)]** is that the earliest an on the day Opportunistic Maintenance outage can commence is 9:00 am on the Trading Day.

2. System Management must not approve an on the day Opportunistic Maintenance request which it considers would require any change in energy scheduled in accordance with the Forecast BMO, or in scheduled Ancillary Services **[MR 3.19.2(b)ii]**.

*As a consequence of Paragraph 10.3.2, a non-Synergy Market Generator needs to ensure that an on the day Opportunistic Maintenance outage request is consistent with the Facility's position in the BMO and latest Forecast BMO.*

3. System Management must as soon as practicable prior to the commencement of the proposed on the day Opportunistic Maintenance, provide confirmation to a Market Participant or Network Operator of its decision to approve or reject a request for on the day Opportunistic Maintenance by telephone and confirm the approval via SMMITS.
4. System Management must as soon as practicable log in SMMITS all approvals and rejections and the reasons for System Management's decision.

## **11 OUTAGE RECALLS**

1. When a situation arises where Power System Security is at risk and the cancellation of outages could potentially alleviate the situation, System Management must consider all current Planned Outages and outages in progress and assess whether rejecting one or more Planned Outages or recalling equipment to service may assist in reducing the identified risk to Power System Security.

*In a High-Risk Operating State, System Management may cancel or defer Planned Outages that have not yet commenced. In an Emergency Operating State, System Management may additionally recall to service Facilities that are on outage according to their Outage Contingency Plans.*

2. If in the view of System Management there is benefit in the action referred to in Paragraph 11.1, System Management may contact the Market Participant or Network Operator and discuss the impact of rejecting the outage or recalling the equipment to service. If such contact is made, System Management must inform the Market Participant or Network Operator of the prevailing operating state and/or any likely change to the operating state requiring the action referred to in Paragraph 11.1.
3. The Market Participant or Network Operator must cooperate with System Management and determine when the equipment can be returned to service and the best way of proceeding with such action. The Market Participant or Network Operator must give this information to System Management as soon as practicable.
4. Market Participants and Network Operators must comply with the directions of System Management to the extent that they are required to do so under the prevailing Operating State.

5. System Management must as soon as practicable update outage cancellations and recalls in SMMITS.

## 12 FORCED OUTAGES AND CONSEQUENTIAL OUTAGES

*The requirements for Forced or Consequential Outages are specified in the Market Rules [MR 3.21].*

1. Where a Facility or item of equipment is unavailable or de-rated, the relevant Market Participant or Network Operator experiencing the unavailability or de-rating must communicate the nature of that unavailability or de-rating by telephone to System Management as soon as practicable, using contact details that are advised from time to time as specified in the Market Rules [MR 3.21.7].

*In addition to the notification in Paragraph 12.1, the relevant Market Participant must make a new Balancing Submission as soon as practicable taking into account the unavailability or de-rated capacity (any Internal Constraint) of the Facility [MR 7A.2.10(a)].*

2. The relevant Market Participant or Network Operator must as soon as practicable confirm the notification provided under Paragraph 12.1 via SMMITS.
3. The relevant Market Participant or Network Operator must, upon request, inform System Management of the Facility or item of equipment's status and provide a good-faith estimate of the likely return to service time.
4. Whenever System Management receives communications from a Market Participant or Network Operator, including but not limited to one or more of the following (as applicable):
  - a. Electronic communications via e-mail or SMMITS; or
  - b. Voice communications; or
  - c. SCADA,  
relating to the capabilities of their Facility or item of equipment System Management must determine whether the affected Facility or item of equipment is unavailable for any period or periods.
5. The Market Participant or Network Operator must provide a full and final description of the Planned Outage, Forced Outage or Consequential Outage to System Management, via SMMITS by midnight on the date specified in the Market Rules [MR 3.21.7].
6. System Management must investigate any communication relating to the availability of a Facility or item of equipment that is not in accordance with the information contained in SMMITS [MR 3.21.7].
7. If the Market Participant believes it has suffered a Consequential Outage, the Market Participant may provide notice from an Authorised Officer to System Management confirming why the Outage should be considered to

be a Consequential Outage within the time limit specified in the Market Rules **[MR 3.21.8]**.

8. A notice provided under Paragraph 12.7 must be signed by an Authorised Officer and may be provided to System Management in person, by email or post.
9. Where a Market Participant provides notice in accordance with Paragraph 12.7 above, System Management must provide a notification of receipt to the impacted Market Participant as soon as practicable.
10. System Management must determine whether to classify the outage as a Consequential Outage in accordance with the requirements of the Market Rules **[MR 3.21.2]**.
11. In determining whether a Facility has experienced a Consequential Outage System Management must accept the information provided under Paragraph 12.7 unless the information is inconsistent with other information held by System Management **[MR 3.21.9]**.

*The Market Rules define a Forced Outage **[MR 3.21.1]** and a Consequential Outage **[MR 3.21.2]**.*

*If a Market Participant does not provide System Management with a notice required under Paragraph 12.7 above, the Outage will not be deemed to be a Consequential Outage **[MR 3.21.10]**.*

### **13 CALCULATION OF PLANNED OUTAGE RATE AND FORCED OUTAGE RATE**

1. The Planned Outage rate and Forced Outage rate for a Facility must be calculated by the IMO in accordance with Appendix 1 of this Procedure.

## APPENDIX 1: CALCULATION OF PLANNED OUTAGE RATE AND FORCED OUTAGE RATE

This Appendix presents the methodology for calculating the Forced Outage rate and Planned Outage rate of a Facility over a period of time (P) for the purposes of the Market Rules.

For the purposes of [MR 4.11.1(h)]: P = 36 Months

### 1. Forced Outage rate calculation

| Outage Rate Calculation   | Definitions  |
|---|--|
| <p><b>Forced Outage rate (%):</b></p> $\frac{(\text{FOH} + \text{EFDH}) \times 100}{\text{PH}}$ | <p><b>FOH (Forced Outage Hours) = sum of all Trading Intervals,</b></p> <p>Where:</p> <p>Outage MW = Capacity Credit (MW) and the Outage Reason is Forced and during the period P multiplied by 0.5.</p> <p><b>EFDH( Equivalent Forced Derated Hours) = sum of all Trading Intervals,</b></p> <p>Where:</p> <p>Outage MW &lt; Capacity Credit (MW) and the Outage Reason is Forced and during the period P multiplied by 0.5 multiplied by Outage MW/Capacity Credit (MW).</p> <p><b>PH (Period hours) =</b></p> <p>where the Facility has been operating over all of period P, the number of Trading Intervals that occurred in period P, multiplied by 0.5; or</p> <p>where the Facility has been operating for less than period P, the number of Trading Intervals that occurred in period P after the Facility commenced operation as advised by the IMO, multiplied by 0.5.</p> |

## 2. Planned Outage rate calculation

| Outage Rate Calculation  | Definitions   |
|--|---|
| <p><b>Planned Outage rate (%):</b></p> $\frac{(\text{POH} + \text{EPDH}) \times 100}{\text{PH}}$ | <p><b>POH (Planned Outage Hours) = sum of all trading intervals</b></p> <p>Where:</p> <p>Outage MW = Capacity Credit (MW) and the Outage Reason is Planned and during the period P multiplied by 0.5.</p> <p><b>EPDH (Equivalent Planned Derated Hours) = sum of all trading intervals</b></p> <p>Where:</p> <p>Outage MW &lt; Capacity Credit (MW) and the Outage Reason is Planned and during the period P multiplied by 0.5 multiplied by Outage MW/Capacity Credit (in MW).</p> <p><b>PH (Period hours) =</b></p> <p>where the Facility has been operating over all of period P, the number of Trading Intervals that occurred within the last 36 months, multiplied by 0.5; or</p> <p>where the Facility has been operating for less than period P, the number of Trading Intervals that occurred in period P after the Facility commenced operation as advised by the IMO, multiplied by 0.5.</p> |