

Changes to RC_2014_03: Administrative Improvements to the Outage Process

**MAC Meeting 2017-05
13 September 2017**

Overview

- Original proposal
- Changes since November 2014
- Review of proposal elements
- Next steps

Original proposal

- Amendments to Consequential Outage process (removal of authorised notice requirement)
- Logging of Forced and Consequential Outages in advance
- Provision of quantities by the IMO to System Management for the calculation of Outages (RCOQ vs Capacity Credits)
- Quantity of de-rating for Scheduled Generators and Non-Scheduled Generators
- Provision of Outage quantities by System Management to the IMO for certification (and Available Capacity calculation)
- Clarification of the timeframes for providing Outage Information to System Management

Changes since November 2014

- IMO and System Management -> AEMO
 - Changes from “provision” to “determination” of outage quantities
- Schedule B, Part 1 (commenced 1 June 2016)
 - Certification (4.11.1(h)) requires Planned Outage rate and Forced Outage rate (definition in PSOP)
- Schedule B, Part 3 (commences 1 October 2017)
 - Equivalent Planned Outage Hours (definition in PSOP)
- EMR - Energy Market Operations and Processes project
 - Included work on Outages

Removal of Consequential Outage authorised notice requirement

Problem

- Requirement for notice signed by Authorised Officer burdensome and unnecessary

Original proposal

- Remove notice requirement
- Participants log Consequential Outage in SMMITS
- System Management approves or rejects

Update

- Keep proposal to remove notice requirement
- **Question:** What happens if CO rejected?

Logging Forced and Consequential Outages in advance

Problem

- Cannot log Forced or Consequential Outages in advance
- Uncertainty for participants and reduced market transparency

Original proposal

- Allow optional logging of FO and CO in advance
- System Management can approve CO before, during or after Outage starts
- Special provisions if CO not yet approved/rejected 30 minutes before Balancing Gate Closure (based on reasonable expectations)
- Rules for exception situations not fully clear

Logging Forced and Consequential Outages in advance

Update

- **Several questions, including**
 - What happens to a CO request rejected in advance?
 - What happens when changes to triggering outage, e.g.
 - Delayed start
 - Early finish
 - Cancellation?
 - CO approval before Reserve Capacity Test exemption?
 - Do 30-minute rules work for Balancing Portfolio?
- May need workshop to clarify

Outage quantity calculation – RCOQ vs Capacity Credits

Problem

- Use of RCOQ in capacity-adjusted outage quantity calculation (clause 3.21.6) impractical – in practice using Capacity Credits

Original proposal

- Amend clause 3.21.6 calculations to replace RCOQ with Capacity Credits
- Replace RCOQ in clause 3.21.6(e) with Capacity Credits

Update

- Use Capacity Credits to calculate capacity-adjusted outage quantities
- No need to prescribe data transfer (already deleted)

Quantity of de-rating for Scheduled and Non-Scheduled Generators

Problem

- SMMITS data entry requirements complex and include non-Market Rules steps (e.g. use of as generated quantities)
- Clauses 3.21.5-3.21.6 broken for Non-Scheduled Generators
 - e.g. Appendix 1(b)(iv) Scheduled Generator-specific
- Unclear how reduction in capacity measured in some cases (e.g. generator trips)

Original proposal

- Separate requirements for Scheduled and Non-Scheduled Generators
- “measured as an average over the Trading Interval”

Quantity of de-rating for Scheduled Generators

Original proposal

- Enter de-rating quantity “as generated, 15 degrees”
- SMMITS converts to “sent out, 15 degrees” (coefficient 1 – source unknown)
- SMMITS converts “sent out, 15 degrees” to “sent out, 41 degrees” (coefficient 2, ratio of Sent Out Capacity at 41 degrees to Sent Out Capacity 15 degrees, based on Standing Data)
- SMMITS applies clause 3.21.6 calculations (using Capacity Credits instead of RCOQ) to calculate capacity-adjusted outage quantities at 41 degrees

Quantity of de-rating for Scheduled Generators

Example for discussion – Scheduled Generator X

- Sent Out Capacity of
 - 97 MW at 45 degrees
 - 100 MW at 41 degrees
 - 102 MW at 25 degrees
 - 105 MW at 15 degrees
- Assigned 90 Capacity Credits
- If no Outages then Generator X
 - Required to provide 90 MW if ≤ 41 degrees
 - Required to provide $90 * 97 / 100 = 87.3$ MW if > 41 degrees

Quantity of de-rating for Scheduled Generators

Example 1: Partial Planned Outage, still able to provide 60 MW up to 41 degrees (no other Outages)

- Participant enters outage quantity of $(42 / \text{Coefficient1})$
- SMMITS converts to sent out, 15 degrees
 - $(42 / \text{Coefficient1}) * \text{Coefficient1} = 42 \text{ MW}$
- SMMITS converts to sent out, 41 degrees
 - $42 * (100 / 105) = 40 \text{ MW}$
- SMMITS calculates capacity-adjusted PO quantity
 - $\text{Max}(0, 40 - \text{max}(0, 100 - 90)) = 30 \text{ MW}$
 - So $\text{RCOQ} = 90 - 30 = 60 \text{ MW}$
- **Question:** Why not just enter sent out, 41 degrees?

Quantity of de-rating for Scheduled Generators

Example 2: Forced Outage – Generator X trips mid-Trading Interval, 25 degrees

- Interval readings show sent out 30 MWh in Trading Interval
- **Question:** What is Generator X's outage quantity, e.g.
 - Average output 60 MW, 30 MW below Capacity Credit level, so log Forced Outage for 40 MW at 41 degrees (30 MW capacity-adjusted) and pay refunds on 30 MW
 - **OR** average output 60 MW, only 25 degrees so 41 degree equivalent is $60 * \text{Sent Out Capacity } 41 \text{ degrees} / \text{Sent Out Capacity } 25 \text{ degrees} = 60 * 100 / 102 = 58.8 \text{ MW}$, so log Forced Outage for 41.2 MW at 41 degrees (31.2 MW capacity-adjusted)
 - **OR** ??? (please provide details)

Quantity of de-rating for Scheduled Generators

Example 3: Forced Outage – Generator X trips mid-Trading Interval, 43 degrees

- Interval readings show sent out 30 MWh in Trading Interval
- **Question:** What is Generator X's outage quantity, e.g.
 - Average output 60 MW, no evidence to show could have done more so log Forced Outage for 40 MW at 41 degrees (30 MW capacity-adjusted)
 - **OR** average output 60 MW, but 43 degrees so 41 degree equivalent is $60 * \text{Sent Out Capacity } 41 \text{ degrees} / \text{Sent Out Capacity } 45 \text{ degrees} = 60 * 100 / 97 = 61.9 \text{ MW}$, so log Forced Outage for 38.1 MW (28.1 MW capacity-adjusted)
 - **OR** ??? (please provide details)

Quantity of de-rating for Non-Scheduled Generators

Original proposal

- Enter de-rating quantity as reduction in capacity from Sent Out Capacity
- No temperature adjustment involved, but called “sent out, 15 degrees”
- Unaffected by “fuel” (wind, sun) availability

Update

- No change to basic concept

Quantity of de-rating for Non-Scheduled Generators

- **Question:** Confirm no material temperature factors, i.e. is “sent out, 15 degrees” the same as “sent out, 41 degrees”?
- **Question:** What materiality threshold for reporting obligation?
 - Currently no threshold in Market Rules
 - Would need to support AWEFS/ASEFS
 - EMOP proposal
 - $\min(0.2 * \text{nameplate capacity}, 6)$ MW
 - average output over a Trading Interval
 - Less critical if not needed for centralised forecasting
 - Still need some threshold for RCM monitoring

Provision of Outage quantities from System Management to the IMO

Problem

- Capacity-adjusted outage quantities provided under clauses 7.3.4 and 7.13.1A(b) unsuitable for some purposes, e.g.
 - Planned and Forced Outage rates for Non-Scheduled Generators for
 - Certification (4.11.1(h))
 - Reserve Capacity Performance Monitoring (4.27)
 - Available Capacity for Minimum TES calculations

Provision of Outage quantities from System Management to the IMO

Available Capacity problem

- Available Capacity used in calculation of Minimum TES when a Scheduled Generator has an Outage in a Trading Interval
- Used if less than normal Minimum TES
- Represents limit of possible Generator output given its Outages
- If too high can result in spurious Constrained Off payments
- Available Capacity also used to calculate Minimum TES for the Balancing Portfolio

Provision of Outage quantities from System Management to the IMO

Available Capacity problem (cont.)

- Generator X example (current rules)
 - FO, sent out 30 MWh, average output 60 MW
 - Log 15 degrees sent out outage quantity of 42 MW
 - SMMITS converts to 41 degrees sent out value of 40 MW
 - SMMITS sends capacity-adjusted value of 30 MW to settlement under clause 7.13.1A(b)
 - Available Capacity calculated as sent out capacity (15 degrees assumed) minus 7.13.1A(b) values
 - $105 - 30 = 75$ MW (15 MW too high)

Provision of Outage quantities from System Management to the IMO

Original proposal

- Change clause 7.13.1A(b)

“as measured on a sent out basis at”

(i) 15 degrees Celsius for Scheduled Generators and Non-Scheduled Generators and

(ii) 41 degrees Celsius for Scheduled Generators

- Change to Available Capacity definition

“Means, for a Trading Interval and for a Scheduled Generator or Non-Scheduled Generator, the Sent Out Capacity, in MW, less the quantity, in MW, of any Outage notified to the IMO under clause 7.13.1A(b)(i)”

Provision of Outage quantities from System Management to the IMO

Update

- Ex Ante Outage Schedule (7.3.4)
 - Capacity-adjusted for Scheduled Generators with Capacity Credits
- Ex Post Outage Schedule (15 Business Days)
 - Capacity-adjusted for Scheduled Generators with Capacity Credits
 - Unadjusted for Scheduled Generators, generating systems serving Intermittent Loads and Non-Scheduled Generators
- Update outage quantity references to distinguish between unadjusted and capacity-adjusted outage quantities

Provision of Outage quantities from System Management to the IMO

Update (cont.)

- Use capacity-adjusted outages for
 - STEM obligations
 - RCM settlement (e.g. refunds)
 - Scheduled Generator Planned/Forced Outage rates for certification and performance monitoring
- Use unadjusted outages for
 - Available Capacity
 - Intermittent Load Refunds (for now)
 - Non-Scheduled Generator Planned/Forced Outage rates for certification and performance monitoring

Provision of Outage quantities from System Management to the IMO

Questions

- What temperature for unadjusted outage quantities?
- What temperature outage quantities for 7.13.1E and 7.13.1G (Market Web Site publication)?
- Available Capacity calculation (may depend on FO quantity recording rules)?
- Specification of Planned/Forced Outage rate and Equivalent Planned Outage Hours
 - Currently defined in PSOP: Facility Outages – unsuitable for Non-Scheduled Generators
 - Certification/settlement calculations – move to appendix of the Market Rules?

Provision of “full and final” Outage details to System Management

Problem

- Clause 3.21.7 requires participants to provide “full and final” details of an Outage no later than 15 calendar days following “the Trading Day”
 - Unclear what Trading Day is meant
 - Not practical for long outages as drafted

Original Proposal

- Amend clause 3.21.7 to specifically refer to a Trading Day on which the Outage occurred or continued to occur

Update

- No change to original proposal

Next steps

- Feedback on questions by **5:00 pm on Wednesday, 20 September 2017**
- Send feedback to rcp.secretariat@rcpwa.com.au
- Depending on feedback may need to workshop some components (e.g. logging Consequential Outages in advance)
- Drafting review and update
- Call for further submissions – target late October
- Draft Rule Change Report