



Department of
**Energy and Economic
Diversification**

Metrics and targets to be used for ongoing monitoring of Essential System Services

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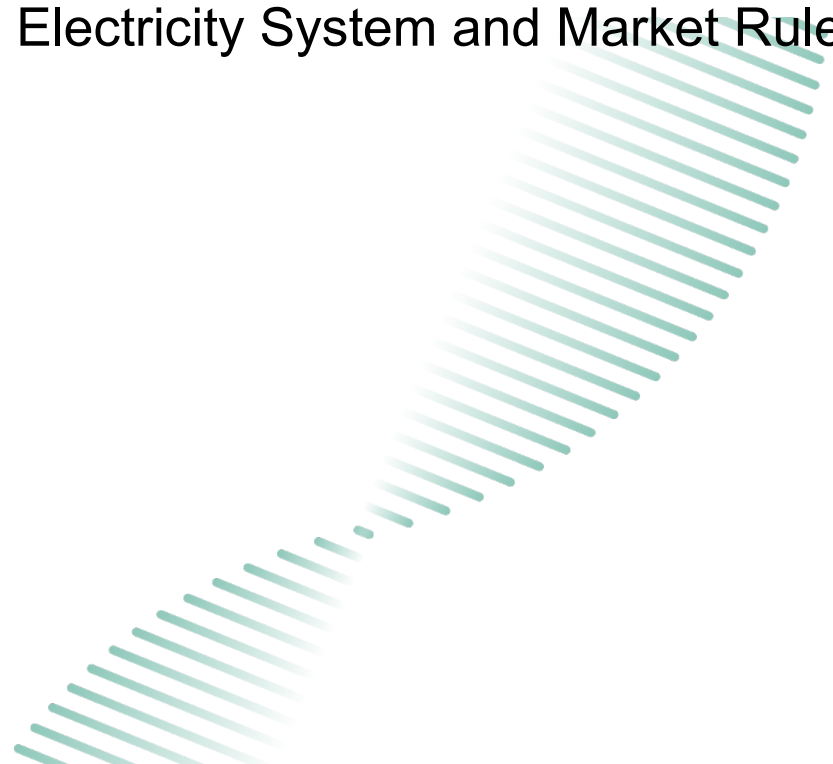


Table 1: To ensure sufficient quantities of Regulation Raise and Regulation Lower are being procured

Metric Number	Description	Proposed Measures / Artefact	Comments
1	SWIS Frequency remains within the normal operating band 99% of the time during any 30-day rolling window.	4 second SCADA monitoring from AEMO's data historian system	
2	Average Area Control Error remains within a specified boundary for at least 90% of the time in any rolling 30-day time window; the boundary to be defined as a function of the system frequency bias used to determine Regulation quantities.	Average Area Control Error as recorded in AEMO's data historian system	To determine specified boundary, which may need to be updated after work on the Regulation Baseline Methodology concludes.
3	Accumulated Time Error of less than 10 seconds for 99% of the time over any rolling 30-day period in the SWIS.	Accumulated Time Error as recorded in AEMO's data historian system	ESM Rule requirement (clause 3B.3.1)
4	Average utilisation of Regulation Raise procured during a Dispatch Interval.	Facility AGC targets while enabled for Regulation Raise, as a percentage of the total enablement, accounting for the base Dispatch Target, and aggregated to a system-wide measure. As recorded in AEMO's data historian system.	
5	Average utilisation of Regulation Lower procured during a Dispatch Interval.	Facility AGC targets while enabled for Regulation Lower, as a percentage of the total enablement, accounting for the base Dispatch Target, and aggregated to a system-wide measure. As recorded in AEMO's data historian system.	

Table 2: To quantify the scarcity of Regulation services

Metric Number	Description	Proposed Measures / Artefact	Comments
6	Accreditation of Regulation Raise services is at least 300% of the maximum required quantity in the past 12 months.	Comparison of maximum Regulation Raise requirement from WEMDE over the previous 12 months, against sum of total accredited Regulation Raise from Registration Standing Data as at the time of the assessment.	This may not require dynamic reporting, and could be reported on a less regular basis.
7	Accreditation of Regulation Lower services is at least 300% of the maximum required quantity in the past 12 months.	Comparison of maximum Regulation Lower requirement from WEMDE over the previous 12 months, against sum of total accredited Regulation Lower from Registration Standing Data as at the time of the assessment.	This may not require dynamic reporting, and could be reported on a less regular basis.
8	Average forecast procured Regulation Raise from the Regulation Baseline Model compared to alternative Regulation Raise requirements set by the AEMO control room in real time.	Average Regulation Raise requirement from the Regulation Baseline Model and Average Regulation Raise requirement as set in WEMDE. Detailed analysis of any periods of material difference between these values.	
9	Average forecast procured Regulation Lower from the Regulation Baseline Model compared to any alternative Regulation Lower requirements set by the AEMO control room in real time.	Average Regulation Lower requirement from the Regulation Baseline Model and Average Regulation Lower requirement as set in WEMDE. Detailed analysis of any periods of material difference between these values.	

Table 3: To monitor the performance of Contingency Services

Metric Number	Description	Proposed Measures / Artefact	Comments
10	Maintaining the Frequency Operating Standard: No violation of the Credible Contingency Operating Band occurs in the South West Interconnected System over any 12 month period.	4 second SCADA monitoring from AEMO's data historian system. AEMO incident reports when significant Contingency Events occur, including frequency outcomes.	These public reports are on an ad-hoc basis. If no event occurs within a 12-month period, there is nothing to report.
11	Maintaining the Frequency Operating Standard: No single Credible Contingency Event creates RoCoF greater than the RoCoF Safe Limit.	AEMO incident reports when significant Contingency Events occur, including frequency outcomes.	These public reports are on an ad-hoc basis. If no event occurs within a 12-month period, there is nothing to report.
12	Accuracy of the Dynamic Frequency Control Model.	AEMO report on the use and accuracy of the Real Time Frequency Stability Tool (RTFS), which shares the same model as the DFCM.	AEMO intends to publish a report on this in the near future. AEMO will continue to assess the modelled outcomes and real events.
13	Market participation: No shortfalls in Contingency Reserve Lower occur during 99% of Dispatch Intervals for any 90-day period, or the number of Dispatch Intervals specified in the WEM Procedure: Supplementary Essential System Service Mechanism Processes.	Contingency Reserve Lower shortfalls as reported in WEMDE outputs.	
14	Market participation: No shortfalls in Contingency Reserve Raise occur during 99% of Dispatch Intervals for any 90-day period, or the number of	Contingency Reserve Raise shortfalls as reported in WEMDE outputs.	

	Dispatch Intervals specified in the WEM Procedure: Supplementary Essential System Service Mechanism Processes.		
15	Market Participation: Accredited Contingency Reserve Raise in the market is at least 250% of maximum Contingency Reserve Raise requirements.	Comparison of maximum Contingency Reserve Raise requirement from WEMDE over the previous 12 months, against sum of total accredited Contingency Reserve Raise from Registration Standing Data, as at the time of the assessment.	
16	Market Participation: Accredited Contingency Reserve Lower in the market is at least 250% of maximum Contingency Reserve Lower requirements.	Comparison of maximum Contingency Reserve Lower requirement from WEMDE over the previous 12 months, against sum of total accredited Contingency Reserve Lower from Registration Standing Data, as at the time of the assessment.	
17	Frequency of RoCoF shortfalls does not exceed the quantity set to trigger Supplementary Essential System Service Mechanism, as specified in the WEM Procedure: Supplementary Essential System Service Mechanism Processes.	RoCoF Control Service shortfalls as reported in WEMDE outputs.	

Table 4: To monitor Economic Performance

Metric Number	Description	Proposed Measures / Artefact	Comments
18	Market cost: Regulation Raise	Settlement Variable: RRpayment_G_I(i)	Aggregated to a Trading Day level for reporting purposes.
19	Market cost: Regulation Lower	Settlement Variable: RLpayment_G_I(i)	Aggregated to a Trading Day level for reporting purposes.
20	Market cost: Contingency Raise	Settlement Variable: CRpayment_G_DI(i)	Aggregated to a Trading Day level for reporting purposes.
21	Market cost: Contingency Lower	Settlement Variable: CLpayment_G_DI(i)	Aggregated to a Trading Day level for reporting purposes.
22	Market cost: RoCoF Control Service	Settlement Variable: RoCoFpayment_G_DI(i)	Aggregated to a Trading Day level for reporting purposes.
23	Market intervention: RoCoF Control Service Uplifts	Settlement Variable: RoCoFUpayment_G(i) , taken as the sum of RoCoFUpayment_P_I(p,i) for all Participants p	Aggregated to a Trading Day level for reporting purposes.
24	Market intervention: FCESS Uplifts	Settlement Variable: FCESSUpayment_G(i), taken as the sum of FCESSUpayment_P_I(p,i) for all Participants p	Aggregated to a Trading Day level for reporting purposes.
25	Market intervention: Energy Uplifts	Settlement Variable: EUP_G(i), taken as the sum of EUP_P_I(p,i) for all Participants p	Aggregated to a Trading Day level for reporting purposes.