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(Lodged electronically to mass.consultation@aemo.com.au) 6 August 2021

AEMO Consultation on the Market Ancillary Services Specification (MASS) January 2021

To Whom it May Concern,

Delta Electricity operates the Vales Point Power Station situated at the southern end of Lake Macquarie in NSW. The power station consists of two 660MW conventional coal-fired steam turbo-generators. Since market start in 1998, Delta Electricity has participated in the support of frequency by way of installed controllers and systems subject to the market ancillary services rules and specifications. Delta Electricity appreciates the opportunity to discuss the draft determination at the consultation forum held on 23 June 2021 and this further opportunity to make a submission on the draft.

In the Delta Electricity March 2021 response, AEMO was encouraged to focus on the following suggestions:

- IMPROVE THE CONNECTIVITY BETWEEN DISPATCH SYSTEMS AND THE MASS
- DISTINGUISH FURTHER BETWEEN CONTROLLER AND RECORDER SPECIFICATIONS – BOTH ARE IMPORTANT AND MAY BE DIFFERENT SYSTEMS ON SOME INSTALLATIONS, and to
- CONSIDER CHANGING THE REGULATION DISPATCH PROCESS

If any of these issues continue to prompt further thought in the revision process in the late finalisation stage, AEMO is encouraged to revisit the previous response from Delta Electricity[1].

MASS Readability and Usability

The MASS is by definition meant to be a “specification”. The word ‘specification’ should not need Rules definitions to advise anyone what the word means but it is acknowledged that clarification of the purpose prescribed by Ancillary Services Rules, as included in the draft determination, is also relevant. To many engineers, documents that provide a concise description of the activities and materials necessary to effect procurement of a required service are known as specifications. If specifications are inadequate or lacking in detail, design engineers of the service provider make assumptions as are required to effect the outcome. If these assumptions mean the services from competing suppliers do not coordinate well in the overall control of frequency then the MASS can be considered to have been lacking in necessary details.

It is acknowledged that AEMO intends to take further steps in the direction of separating out the requirements for frequency controllers and FCAS metering in future revisions. Delta Electricity looks forward to further revisions that develop the MASS into a more effective specification.

[1] Delta Electricity 11 March 2021 response to Draft Market Ancillary Services Specification (MASS) January 2021

New Technical Signals for Regulation FCAS

The draft determination and the revised MASS appear to be requiring new signals, Control Request Feedback, Online/offline status and Remote/Local Status and signal capabilities to be included for in SCADA exchange as improvements to the Regulation FCAS system. Some of these signals and capabilities may already exist in some participant's SCADA set and be complimented by third party SCADA systems and capability. As a result, participants may be uncertain whether or not AEMO requires any new signals from them.

It is recommended that following the publications of the updated MASS, AEMO checks its signal database and writes letters of request to each relevant existing service provider requesting the specific signals and signal quality be confirmed. To avoid the inefficiency and expense in making modifications that may not make any difference to the delivery, discussions as to whether any additional work can be considered optional or not may be useful for both AEMO and the participant. From such discussions agreements can be reached to specific timeframes for modifications before any further action from AEMO might be warranted to ensure controls are adequate.

To expand on this point by example, consider the online/offline status signal proposed by the draft determination for inclusion in signals associated with the regulation service. For plants that are normally in service and only plan to have one outage a year, it hardly seems to be an urgently required modification to include online/offline status in the SCADA else a Unit be unacceptable as an FCAS provider. Some plants may also presently be relying on a signal provided to AEMO by TNSPs. With acknowledgement of clause 2.3, it is unclear whether signals from third parties can provide satisfaction for the purposes of the MASS and hence it is suggested that AEMO write to relevant existing providers identifying clearly any new signals it considers required and, otherwise, excuses existing participants from needing to have the new signals added.

Testing for Regulation FCAS

Regarding the testing proposed for the Regulation services, Delta Electricity considers that relying on participants to plan and initiate tests will be problematic, lacking efficiency in the coordination effort and likely to promote disputation should delays in testing occur or constraints arise because of reasons outside the control of the participant. As described by the MASS clauses 10.5 and the new 10.6, testing effort will require AEMO preparation, coordination, test signal delivery and test report acknowledgement. Participants will therefore be needing AEMO advice and assistance in performing the tests and AEMO will probably prefer consistency in the formats of participant test reports.

Detailed knowledge of the AEMO AGC may be required in order for participants to gain full understanding of the causes of an unsuccessful Regulation test. The AEMO energy dispatch signal delivery process, timing and third-party telecommunication systems may also be possible contributing factors in any service test difficulty experienced by service providers carrying out such tests and actions may need to be assigned to AEMO and/or third-parties which therefore demands coordination in the test process.

Delta Electricity considers that AEMO can probably perform such tests with very limited involvement of regulation service provider or third-party telecommunication companies and would achieve superior consistency, efficiency and comparability between competing participants in the testing results and command greater authority in addressing detected defective performance. After all, AEMO has the Rules obligations of ensuring frequency is adequately controlled and AEMO regulation service dispatch designs and dispatch signals and the passage of how those signals reach the relevant service provider are integral parts of the system. Reconsideration on this point is recommended.

Comments on the Determined Draft MASS

The Specification has added words in several places that may represent a theoretical view of what the MASS is trying to specify but in application for existing installations, the wording becomes problematic.

Section 2.2 tries to ensure a Unit delivers both regulation and contingency FCAS simultaneously. It is considered likely that AEMO intended these words to specify that a regulation FCAS enabled Unit be capable of responding to a regulation dispatch instruction before, during and after any detection, response and recovery period associated with a contingency FCAS event the Unit is also enabled to respond to. The use of the word 'simultaneously' is best avoided as it confuses the reader. e.g. a contingency event is unlikely to occur at the precise moment AEMO dispatches regulation FCAS adjustments to the energy target. It could but it is not necessary to describe the two as being simultaneous. Coincident is perhaps a better word.

Section 3.2 includes new advice about how regulation FCAS works in tandem with primary frequency control. In theory this represents good control and it would be beneficial to the system if it was the case. In reality, at many coal-fired installations, this is not accurate. Regulation FCAS works in tandem with energy dispatch controllers as the amount is delivered with the energy dispatch target. PFR actually works in tandem with Contingency FCAS controllers which adjust the target sent to the Turbine when conditions require it. Because of the way AEMO dispatches Regulation FCAS, its delivery is inherently delayed, whilst PFR and contingency FCAS systems are instantaneous in delivery. The wording of the MASS could be modified to recognise existing controllers.

Section 10.3 tries to specify a control diagram that is not in accordance with existing designs of Coal plants to the knowledge of Delta Electricity. The words and diagrams imply a sequence that is not correct. In a continuous control loop, the sequence is more like:

1. AEMO Dispatch Engine determines a Unit energy and Regulation FCAS target after considering existing Network and the latest Unit Actual MW conditions and requirements for FCAS.
2. From the start of a Dispatch Interval to the end of the interval, AEMO AGC dispatches target signals updated every 4s that is the combination of energy and Regulation FCAS delivered in a timed fashion that AEMO tunes when the controls are first commissioned.
3. Local Unit Controllers receive the AEMO target, inclusive of regulation FCAS amounts dispatched by AEMO.
4. Local Unit Controllers process the setpoint target to ensure plant security limitations are not exceeded.
5. Immediately prior to sending any control action to the turbine, the local unit controller adjusts the setpoint target to include any required PFR or Contingency FCAS action.

The words and diagram in the determined draft MASS are not easy to relate to. Perhaps the words and diagram should be qualified as being an example only or maybe several existing controllers should be examined to aid in describing systems at the high level being attempted that do not conflict in anyway with systems already constructed if such systems are expected to remain acceptable.

The wording of 10.4, some of which remains from previous versions, is problematic in its English also. It is suggested that the service facility "must have a control system **that can**" makes more sense than "must have a control system **to**". The latter phrase makes it sound like the controller has the purposes of doing the things described by a to f when really its purpose is to control frequency in accordance with the MASS and the items described are features to be included for in the controller.

The use of phrases such as "at all times" in the MASS is problematic. Units will occasionally be unable to do the full specification. Other Rules and clauses of the MASS (e.g. 5.1.) oblige participants to not

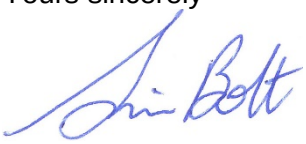
engage in markets where conditions arise where capability to provide the service is impacted. Therefore, the MASS doesn't necessarily need to reinforce technical requirements with time-based words. The MASS should consider making reference to Rules that remind participants of the nature of lawful bids to provide the services. For example, if a Unit cannot maintain some Control Response Delay "at all times", it should not mean they cannot be considered for registration to provide MASS related services which should be the focus of the specification. It should specifically mean that when it becomes apparent that they may not be meeting the provision, participants should withdraw bids from the market until they have reestablished the correct technical capability. It may not be possible for any provider to maintain each technical requirement "at all times". Describing capability is more important in the MASS than prescribing expectations for operation "at all times". Rules on dispatch conformance cover the latter.

Comment on Dispatch Automation

On perhaps an unrelated final note, Delta Electricity considers that Contingency FCAS Dispatch could be enhanced by AEMO requiring additional signalling not considered in AEMOs 2021 MASS review. In a similar way to Regulation FCAS and the automated deselection of Units that automatically drop out of Remote Control, Delta Electricity considers AEMO systems could, in receipt of certain controller activation signals, disengage Contingency FCAS enablements in the event that enabled Units automatically runback from coordinated modes where DCS based FCAS controls are activated.

Delta Electricity will continue to be engaged with the frequency control work program and the changes to the MASS and if AEMO wishes to discuss this submission please contact Simon Bolt on (02) 4352 6315 or simon.bolt@de.com.au.

Yours sincerely



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