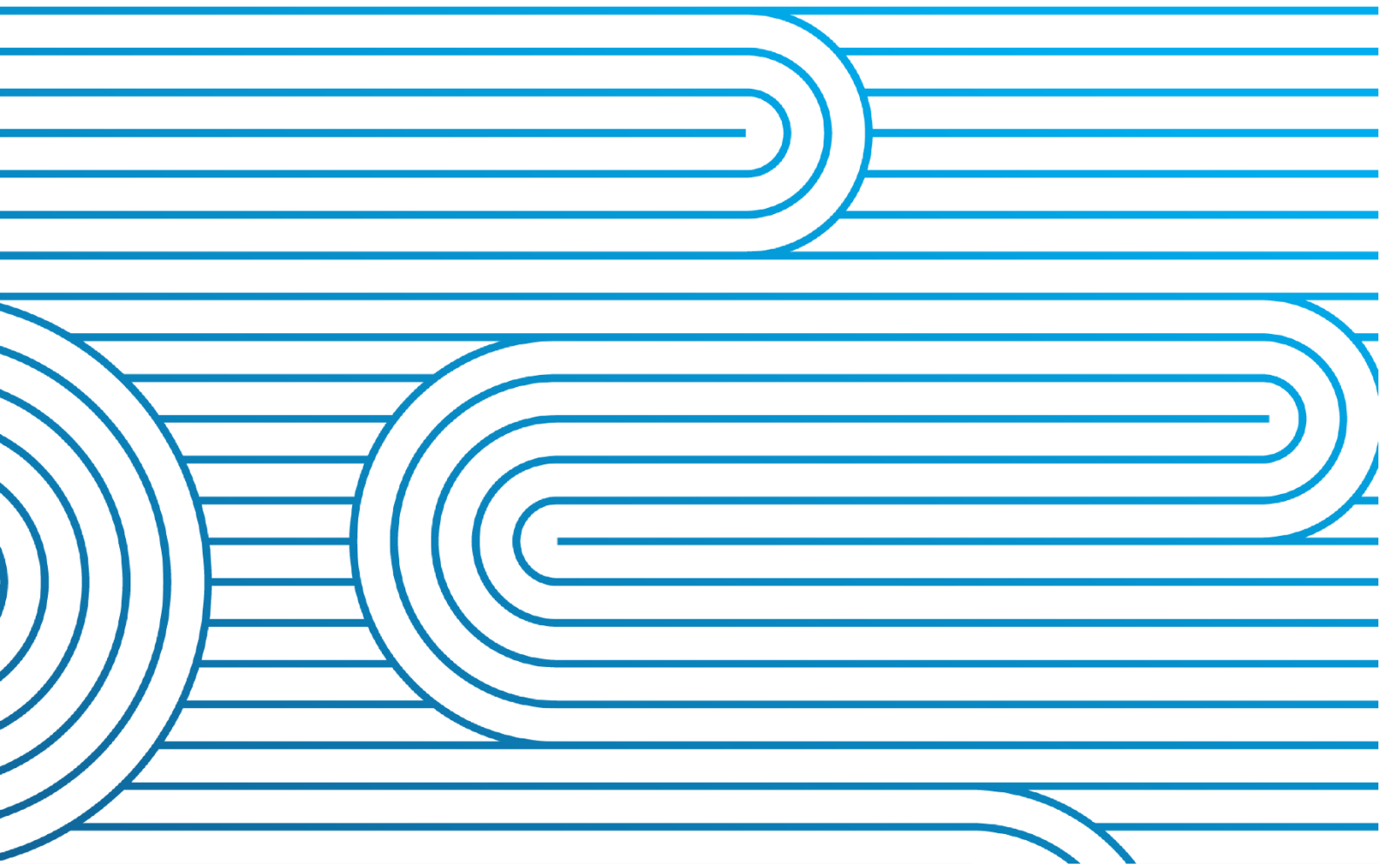


Ancillary Services Procurement Plan 2020-21 Review

Invitation to Comment

Version: 1.0

Date: August 2021



IMPORTANT

Disclaimer

The information in this document is provided in good-faith and represents the opinion of Transpower New Zealand Limited, as the System Operator, at the date of publication. Transpower New Zealand Limited does not make any representations, warranties or undertakings either express or implied, about the accuracy or the completeness of the information provided. The act of making the information available does not constitute any representation, warranty or undertaking, either express or implied. This document does not, and is not intended to; create any legal obligation or duty on Transpower New Zealand Limited. To the extent permitted by law, no liability (whether in negligence or other tort, by contract, under statute or in equity) is accepted by Transpower New Zealand Limited by reason of, or in connection with, any statement made in this document or by any actual or purported reliance on it by any party. Transpower New Zealand Limited reserves all rights, in its absolute discretion, to alter any of the information provided in this document.

Copyright

The concepts and information contained in this document are the property of Transpower New Zealand Limited. Reproduction of this document in whole or in part without the written permission of Transpower New Zealand is prohibited.

Contact Details

Address: Transpower New Zealand Ltd
22 Boulcott Street
PO Box 1021
Wellington
New Zealand

Telephone: +64 4 590 7000

Email: system.operator@transpower.co.nz

Website: <http://www.transpower.co.nz>

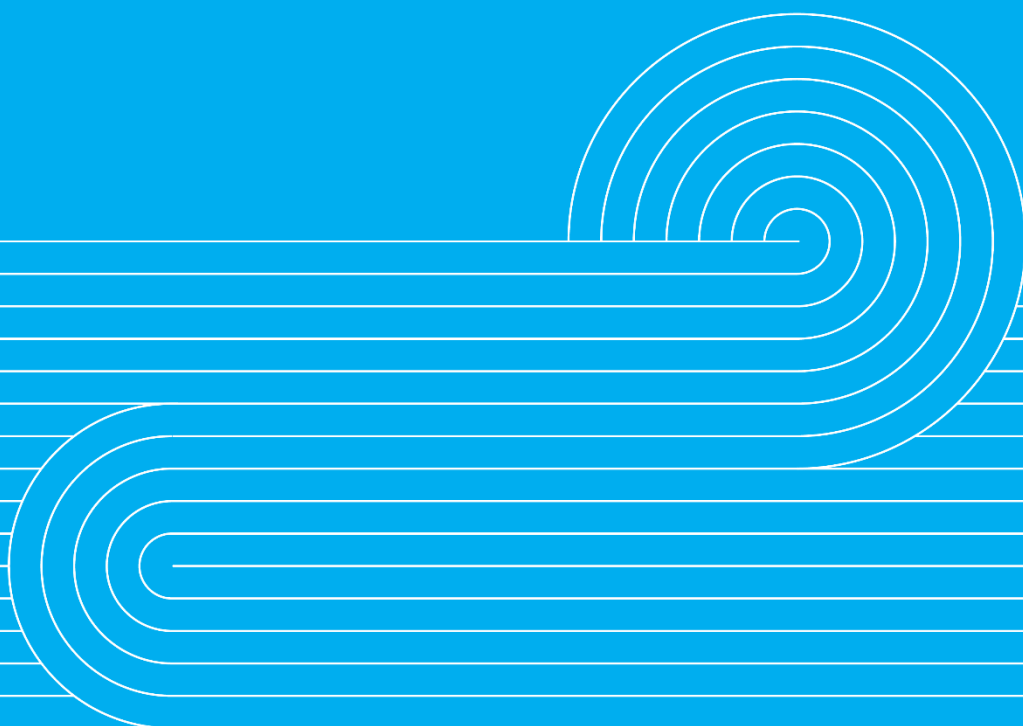


Contents

1.0 Summary	1
2.0 Invitation to Comment	1
3.0 Proposed Procurement Plan Changes	1
3.1 General Changes	2
3.2 Frequency Keeping.....	2
3.3 Instantaneous Reserve.....	4
3.4 Over Frequency Reserve	6
3.5 Black Start	6
3.6 Voltage Support.....	7
4.0 Potential Future Changes	1
4.1 Single Provider Frequency Keeping Provision	2
4.2 Single Provider Frequency Keeping Performance Requirements	2
4.3 Classifications for Instantaneous Reserve	3
4.4 Additional Requirements for Tail Water Depressed Reserve	3
4.5 Incorporating References to Companion Guides	4
4.6 Interruptible Load Over Delivery	4
5.0 Details for Proposed Changes to the Procurement Plan	1
5.1 Proposed Changes to Clauses	2
5.2 Proposed Changes to Definitions.....	11
6.0 Questions	1
7.0 Appendices	1
7.1 Draft AS Procurement Plan (Clean).....	2
7.2 Draft AS Procurement Plan (Marked up)	2



1.0 Summary



Transpower as the system operator (we, our) has reviewed the Ancillary Services Procurement Plan (Procurement Plan) as required under clause 8.42A of the Electricity Industry Participation Code (the Code). As part of the review, we invite comments from participants on the proposed changes detailed in this document.

The Procurement Plan:

- specifies the principles to be applied in assessing what, and how much, ancillary services to procure;
- contains a methodology for making that assessment;
- outlines the process for procurement of ancillary services;
- specifies the administrative costs for ancillary services procurement; and
- outlines the technical requirements and key contracting terms we will apply when entering into contracts for ancillary services.

We currently procure four ancillary services:

- frequency keeping
- instantaneous reserve;
- over frequency reserve, and;
- black start.

We can also procure a fifth ancillary service: voltage support.

The draft Procurement Plan contains proposed changes, with respect to the requirements for:

- **frequency keeping:**
 - introduces a requirement for back-up single provider frequency keeping providers to conduct a pre-contract technical review;
 - introduces a maximum response time for back-up single provider frequency keeping;
 - increases monitoring requirements for back-up single provider frequency keeping;
 - introduces a requirement for measurement accuracy for single provider frequency keeping when monitoring frequency time error;
 - increases and aligns the data retention requirements for both multiple and back-up single provider frequency keeping;
 - aligns single provider frequency keeping requirements for block and station dispatch groups with multiple provider frequency keeping;
 - aligns offer timeframe requirements with the current gate closure period requirements;
 - introduces additional dispatch requirements; and
 - introduces responsibilities to share data with the system operator associated with special testing.
- **instantaneous reserves:**
 - introduces performance requirements for the different forms of instantaneous reserve;
 - increases instantaneous reserve monitoring;
 - reduces the frequency of periodic testing of equipment used to provide *interruptible load other than that provided by battery energy storage systems*;

- introduces a requirement for instantaneous reserve equipment to be tested upon completion of changes to equipment that could impact its instantaneous reserve performance;
 - makes distinctions between requirements for *generation reserve, and interruptible load provided by battery energy storage systems* and *interruptible load other than that provided by battery energy storage systems*, and;
 - introduces responsibilities to share data with the system operator associated with special testing and responses to under-frequency events.
- **over frequency reserve:**
 - reduces the frequency of periodic testing of over frequency reserve equipment, and;
 - introduces data sharing responsibilities associated with special testing.
- **black start:**
 - introduces requirements for ancillary service agents to notify the system operator upon rectification of an issue causing failure to perform black start; and
 - reduces the baseline testing requirements for black start equipment.
- **voltage support:**
 - introduces responsibilities to share data with the system operator associated with special testing.

This document details these proposed changes and the rationale for them. It also identifies potential future changes to the Procurement Plan to:

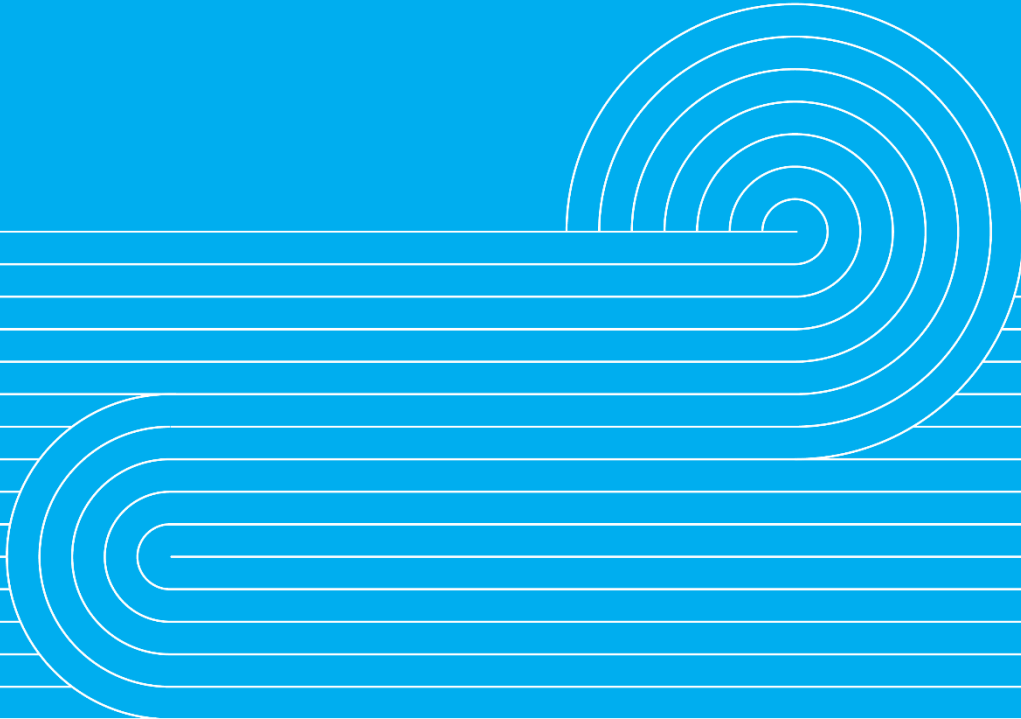
- align the minimum number of providers procured for single provider frequency keeping procurement requirements with the minimum number for black start;
- determine revised performance requirements to replace clause B4 of the Procurement Plan and the related sections of the Ancillary Services Procurement Contract (ASPC) back-up SFK schedule;
- improve the distinction in the instantaneous reserve section of Appendix B of the Procurement Plan between requirements for *generation reserve, and interruptible load provided by battery energy storage systems* and *interruptible load other than that provided by battery energy storage systems*;
- specify the reset to generate mode requirement for providers of tail water depressed reserve in response to the recovery of frequency;
- incorporate referencing to the companion guides to improve clarity of standards that are to the reasonable satisfaction of the system operator, and;
- revisit the potential risk of over delivery of interruptible load consulted on in the previous Procurement Plan review and Invitation to Comment¹ (2018-19 Review).

We invite participants to submit their comments on both the draft Procurement Plan and potential future changes to the Procurement Plan to us before **5:00pm on 27 August 2021**.

Once comments have been received and assessed, the draft Procurement Plan will be submitted to the Electricity Authority (the Authority) for formal consultation under clause 8.44 of the Code on **27 September 2021**.

¹ Ancillary Services Procurement Plan 2018-19 Review - Invitation to Comment

2.0 Invitation to Comment



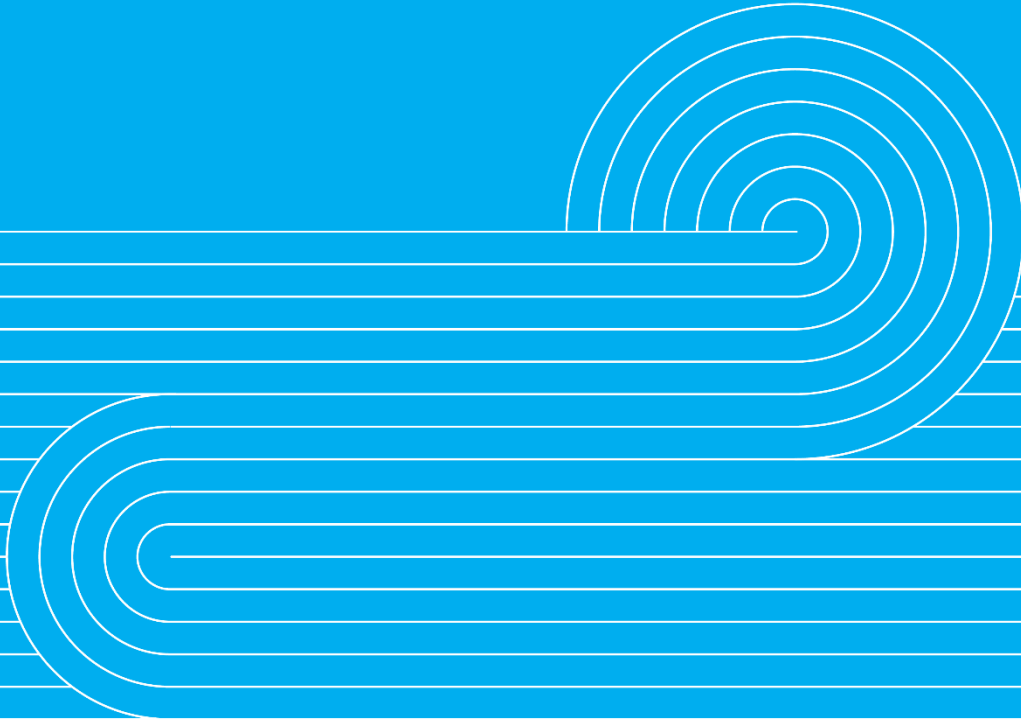
We invite comment from participants on the draft Procurement Plan included with this document. A series of questions have been provided in Section 5.0.

The current Procurement Plan can be found on the Authority's website here: [Gazetted 2020 Procurement Plan](#).

This invitation to comment is open until **27 August 2021**. Responses received after this time may not be considered. Receipt of comments will be acknowledged electronically.

Please direct all correspondence to system.operator@transpower.co.nz with the subject line: AS Procurement Plan Review 2020-21.

3.0 Proposed Procurement Plan Changes



We, in our role as System Operator, have undertaken a review of the Procurement Plan which has resulted in proposed changes to the ancillary services procurement principles, methodologies and processes (the main body and Appendix A of the Procurement Plan), and to the technical requirements (detailed in Appendix B of the Procurement Plan) for frequency keeping, instantaneous reserve and over frequency reserve. A summary of the proposed wording changes, and the rationale for each change, is provided in Section 5.0. Minor changes to the technical requirements for voltage support and black start are also proposed.

No substantive changes were identified for the key contracting terms (Appendix C of the Procurement Plan).

Some of the technical changes proposed will have consequential changes to the ASPCs. We propose implementing technical changes in the ASPCs when they become due for renewal.

3.1 General Changes

In December 2020, the Authority began developing Code changes with the intention of enabling injection from grid-scale energy storage systems to be offered in the instantaneous reserve market. These proposed changes to the Code have flow-on impacts to the Procurement Plan therefore making it necessary to develop corresponding changes to maintain its consistency with the Code.

In addition to the energy storage system related changes, we have conducted a full review of the Procurement Plan in order to identify any other areas for enhancement or clarification. These changes are set out in Section 5.

Due to the extensive nature of the proposed changes, the Procurement Plan's clause structuring has been reset. Therefore, once gazetted, any referencing to the Procurement Plan should be rechecked as the clause numbers may not carry over from the current version to the next.

3.2 Frequency Keeping

We are seeking to improve the clarity of the frequency keeping requirements, particularly related to single provider frequency keeping performance and with regard to special testing requirements for all frequency keepers. The specific changes are set out in Section 5.0.

Where possible, we are seeking to align requirements for single provider frequency keeping with the requirements for multiple provider frequency keeping. These proposed changes would:

- introduce a requirement for parties who wish to provide single provider frequency keeping to conduct a pre-contractual technical review. This is an alignment with the existing requirement for parties who wish to provide multiple provider frequency keeping (paragraph 28);
- increase the granularity with which single provider frequency keepers must measure and record FK output to at least once every second. This is an alignment with the existing requirement on parties who provide multiple provider frequency keeping (new paragraph B10.1);

- improve and align the requirement for frequency keeping providers to hold all frequency keeping data for each calendar month for at least 15 business days following the end of that calendar month (new paragraph B13), and;
- extend the requirements to single provider frequency keeping sites that are part of a block dispatch group, station dispatch group, or group(s) of load sources/sites to be treated as the allocated frequency keeping units. This is an alignment with the existing requirement on multiple provider frequency keeping providers (new paragraph B14).

We also welcome further feedback on the following proposed changes to the requirements for frequency keeping providers:

1. subject to paragraph B7, when providing single provider frequency keeping the ancillary service agent must, when there is a grid frequency error, ensure the relevant FK site responds to eliminate the grid frequency error and commences the response as fast as practicable but in all cases within 10 seconds of the grid frequency error occurring (new paragraph B3.1);
2. when an FK site is providing single provider frequency keeping the relevant monitoring equipment must measure and record frequency at least once every second (or such longer period as the System Operator may determine) (new paragraph 10.2);
3. when an FK site is providing single provider frequency keeping the relevant monitoring equipment must measure and record frequency time error with a specific accuracy (new paragraph B10.3);
4. the ancillary service agent may submit an offer to provide frequency keeping for that trading period, no later than two trading periods immediately preceding the trading period to which the offer relates (new paragraph B16);
5. the ancillary service agent must ensure that prior to entering a trading period for which it has received a dispatch instruction to provide frequency keeping, the relevant frequency keeping units are connected and able to perform frequency keeping from the start of that trading period (new paragraph B28); and
6. upon completion of a baseline test or on-demand test the ancillary service agent must provide the System Operator with the corresponding test data and verification of meeting the performance requirements within 15 business days (new paragraph B35).

The first requirement (new paragraph B3.1) has been added to identify the outer limit within which frequency keeping units, when providing single provider frequency keeping, must commence a response to eliminate a grid frequency error. This limit has been set to 10 seconds. However, the frequency keeping units should respond as quickly as is practical.

The second requirement (new paragraph B10.2) increases the granularity with which an FK site providing single provider frequency keeping must measure and record frequency from at least once every eight seconds to at least once every second. This aligns with a similar requirement currently placed on multiple provider frequency keepers to measure and record FK output at least once every second.

The third requirement (new paragraph B10.3) has been altered in order to add an accuracy of 0.05 seconds to the requirement to monitor and record frequency time error at least twice every minute. This addition has been made as both paragraphs B10.1 and B10.2 (for measuring and recording FK output and frequency respectively) have accuracy requirements.

The fourth requirement (new paragraph B16) has been altered in order to shorten the gate closure period for frequency keeping from a minimum of two hours to a minimum of two trading periods

(one hour) immediately preceding the trading period to which the offer relates. This clause is now aligned with the gate closure period for offers defined in Part 1 of the Code.

The fifth requirement (new paragraph B28) has been added to ensure that units that are about to provide frequency keeping are in a state to do so at the beginning of the relevant trading period. Previously there hasn't been a requirement for frequency keeping providers to be prepared to provide the service before the beginning of the trading period they are dispatched for which has led to deviations in frequency during changeover of frequency keeping providers.

The sixth requirement (new paragraph B35) has been added to avoid the System Operator having to request the results of baseline tests or on-demand tests. This aligns with new requirements for instantaneous reserves, over frequency reserve and voltage support (new paragraphs B57, B66 and B74).

3.3 Instantaneous Reserve

We are seeking to improve the structure and clarity of instantaneous reserve requirements, particularly related to technical performance and special testing requirements. The specific changes are set out in Section 5.

In addition to the structural and clarification changes mentioned above, we have reclassified generation and load specific instantaneous reserve requirements. Currently, if an instantaneous reserve requirement is specific to generation or load the clause specifies either instantaneous reserve, other than interruptible load or interruptible load. With the addition of the definition for generation reserve in Part 1 of the Code and the need to incorporate battery energy storage systems into the Procurement Plan requirements, these have been revised to generation reserve, and interruptible load provided by battery energy storage systems and, interruptible load other than that provided by battery energy storage systems. This ensures that the controlled response from a battery energy storage system is in proportion to the deviation in system frequency across both injection and consumption operating ranges as a discrete controlled asset.

We also welcome further feedback on the following proposed changes to the requirements for instantaneous reserve providers:

1. the ancillary service agent must ensure that at all times the equipment that is the subject of the reserve offer meets:
 - a. for interruptible load other than that provided by battery energy storage systems the timeframe requirements (new paragraphs B37.2.1-2), and;
 - b. for generation reserve, or battery energy storage systems providing interruptible load meets the response requirements and requirements to remain connected to the grid (new paragraphs B37.4-6).
2. the ancillary service agent must provide monitoring equipment that accurately measures and records the instantaneous reserve response (in MW) with increased granularity for both fast and sustained instantaneous reserves. The monitoring equipment must also measure and record the locally measured frequency and relay activation signal, all in a time-tagged manner (new paragraph B43).

3. decreasing the frequency with which an ancillary service agent must conduct an end-to-end test on equipment used to provide interruptible load other than battery energy storage systems to at least once every 24 months (new paragraph B63);
4. the ancillary service agent must conduct a baseline test of the equipment it uses to provide instantaneous reserve following any change that may impact its instantaneous reserve performance (new paragraph B53), and;
5. upon completion of a baseline test, end-to-end test or response to an under-frequency event the ancillary service agent must provide the System Operator with the corresponding test data and verification of meeting the performance requirements within 15 business days (new paragraph B57).

The first requirement (new paragraphs B37.2.1-2) introduces the timeframe requirements for interruptible load previously specified within the definitions for fast and sustained instantaneous reserve in Part 1 of the Code. This transfers these technical requirements from the Code to the Procurement Plan. Additionally, new paragraphs B37.4-6 have taken requirements from Appendix A of Technical Code A in Part 8 of the Code. These have been extended to all ancillary service agents with assets that are subject to a reserve offer.

The second requirement (new paragraph B43) was consulted on in the 2018-19 Review as a potential future change. In addition to the change to increase the granularity of the measurement and recording functions of the monitoring equipment, this clause has also been modified to include the pre and post event periods that the ancillary service agent is required to provide data for in the event of an under-frequency event. These changes add clarity to the monitoring requirements for instantaneous reserve.

The third requirement (new paragraph B50) has been altered in order to decrease how often end-to-end testing must be conducted for providers of interruptible load other than that provided by battery energy storage systems. The testing requirement has been reduced from at least once every 12 months to at least once every 24 months. We anticipate this will reduce participants' compliance requirements without unduly affecting performance of the service.

The fourth requirement (new paragraph B53) has been added as a means of ensuring that information about available instantaneous reserve at each site is correct and up to date at all times. Instantaneous reserve quantities and/or performance at each site could fluctuate based on changes to equipment throughout the AS procurement contract period without the knowledge of the system operator.

The fifth requirement (new paragraph B57) has been added to avoid the System Operator having to request the results of baseline tests, on-demand tests or response to an under-frequency event. The requirement is that the ancillary service agent provides the corresponding test data and verification of meeting the performance requirements within 15 business days. This aligns with new requirements for frequency keeping, over frequency reserve and voltage support (new paragraphs B35, B66 and B74).

3.4 Over Frequency Reserve

We are proposing, and welcome further feedback on, the following changes to the special testing requirements for over-frequency reserve providers:

1. decreasing the frequency with which an ancillary service agent must conduct a baseline test of each item of relay equipment to at least once every 24 months (new paragraph B63), and;
2. upon completion of a baseline test or on-demand test the ancillary service agent must provide the system operator with the corresponding test data and verification of meeting the performance requirements within 15 business days (new paragraph B66).

The first requirement (new paragraph B63) has been altered in order to decrease how often baseline testing must be conducted for over frequency reserve providers. The testing requirement has been reduced from at least once every 12 months to at least once every 24 months. We anticipate this will reduce participants' compliance requirements without unduly affecting performance of the service.

The second requirement (new paragraph B66) has been added to avoid the system operator having to request the results of baseline tests or on-demand tests. The requirement is that the ancillary service agent provides the corresponding test data and verification of meeting the performance requirements within 15 business days. This aligns with new requirements for frequency keeping, instantaneous reserve and voltage support (new paragraphs B35, B57 and B74).

3.5 Black Start

We are seeking to improve the structure and clarity of black start requirements, particularly related to special testing requirements. The specific changes are set out in Section 5.

We are also proposing, and welcome further feedback on, the following change to the monitoring requirement for black start providers:

1. if an issue has prevented an ancillary services agent's equipment from being capable of providing black start, the ancillary service agent must now advise the System Operator once the issue is rectified.

This requirement (new paragraph B82) has been altered in introduce a requirement for ancillary service agents to notify the System Operator once a failure preventing the performance of black start has been rectified. This change would align the requirement with current industry practice.

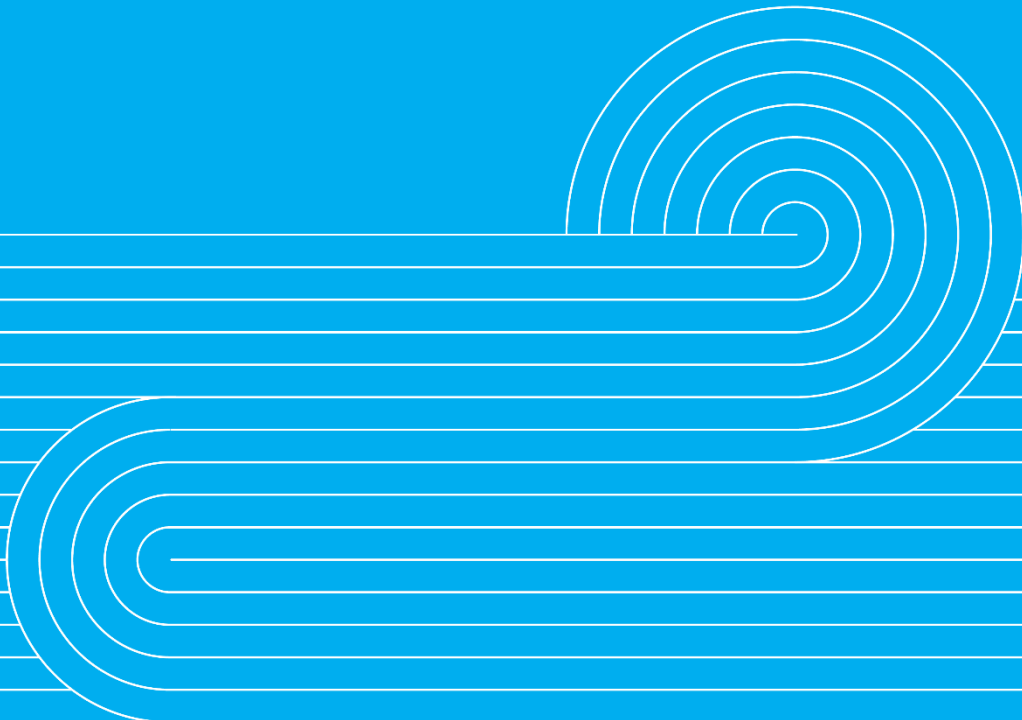
3.6 Voltage Support

We are proposing, and welcome further feedback on, the following change to the special testing requirements for voltage support providers:

1. upon completion of an on-demand test the ancillary service agent must provide the system operator with the corresponding test data and verification of meeting the performance requirements within 15 business days (new paragraph B74).

This requirement (new paragraph B74) has been added to avoid the System Operator having to request the results of on-demand tests. The requirement is that the ancillary service agent provides the corresponding test data and verification of meeting the performance requirements within 15 business days. This aligns with new requirements for frequency keeping, instantaneous reserve and over frequency reserve (new paragraphs B35, B57 and B66).

4.0 Potential Future Changes



Our review has highlighted other issues that may require changes to the Procurement Plan in the future. Our goal is to seek feedback from ancillary service providers as a first step towards addressing these issues.

4.1 Single Provider Frequency Keeping Provision

The Procurement Plan currently sets out the methodology for net purchase quantity assessment of back-up SFK. Paragraph 27 states: *The System Operator may procure back-up SFK from one or more parties, but is not required to enter into an ancillary service procurement contract for back-up SFK with every potential provider of back-up SFK.*

We wish to align the procurement requirements for back-up SFK with the procurement requirements for Black Start, specifically those stated in paragraph 39 which states: *The system operator must use reasonable endeavours to have ancillary service procurement contracts for black start at two sites in each island.*

Currently all providers of back-up SFK are contracted to be available. We believe contracting only two providers to be available in each island at any one time is sufficient.

Such a change should decrease the total availability fee paid out on a monthly basis to all available providers of back-up SFK.

However, if the number of back-up SFK providers is limited to two per island, there will need to be additional requirements such as outage notification periods and additional testing requirements to ensure that we are confident that upon the need the service will be provided.

On an annual basis there is an HVDC bipole outage which tends to exceed 24 hours. We would need to be confident that two providers would be sufficient to share the responsibility of providing frequency keeping for such an extended period of time.

4.2 Single Provider Frequency Keeping Performance Requirements

The Procurement Plan currently sets out the performance requirements specific to management of frequency in relation to providing single provider frequency keeping in paragraphs B3 and B4 of Appendix B.

Paragraph B4 states: *Subject to paragraph B6, the ancillary service agent must ensure the deviation of the grid frequency over any of the ancillary service agent's single provider frequency keeping periods does not exceed the maximum allowable deviation specified in the ancillary service agent's ancillary service procurement contract. Such deviation must be determined by reference to the System Operator measured frequency but excluding any frequency measurements that are outside the normal band.*

Prior to the next consultation on the Procurement Plan we intend to further review the performance requirements for single provider frequency keeping.

4.3 Classifications for Instantaneous Reserve

During this review of the Procurement Plan we have added two new classifications for instantaneous reserve:

- *generation reserve, and interruptible load provided by battery energy storage systems;*
and,
- *interruptible load other than that provided by battery energy storage systems.*

There is a need to improve upon these classifications as our preference is to keep the Procurement Plan as technology neutral as possible. However, in this instance we were unable to incorporate battery energy storage systems while ensuring that the controlled response from a battery energy storage system is in proportion to the deviation in system frequency across both injection and consumption operating ranges as a discrete controlled asset without these classifications.

4.4 Additional Requirements for Tail Water Depressed Reserve

We have identified a need to better define the performance and behaviour of how tail water depressed reserve (TWD) is triggered and reset logic to speed control is applied for providers of TWD in response to the recovery of frequency. Also, the requirement to ensure that TWD logic is shown in the power system model submitted to the System Operator and adequately validated against test results.

Typically, TWD triggering should be with a frequency pickup setpoint of 49.2 Hz or above with an appropriate on-delay, then ramp generating unit output to a given load MW setpoint. TWD reset logic is a primary concern for potential over-frequency, some logic that has been observed is below and is ordered by most preferred:

1. IDEAL – TWD reset logic (revert to speed control) as soon as practicable once rate of change of frequency turns positive (E.g. frequency starts to recover);
2. ACCEPTABLE – TWD reset logic once the frequency goes above the frequency pick-up setpoint (typically called the drop-off setpoint);
3. NOT ACCEPTABLE – TWD reset logic once the frequency re-enters the normal band (E.g. 49.8 Hz);
4. NOT ACCEPTABLE – TWD reset logic once load setpoint is reached (E.g. continue to ramp when the frequency has already recovered above the frequency pick-up setpoint);

Prior to the next consultation on the Procurement Plan we intend to further review the performance requirements for TWD response from hydro generating units.

4.5 Incorporating References to Companion Guides

Throughout the Procurement Plan there are several instances where requirements must be met to the reasonable satisfaction of the System Operator.

Incorporating references to the relevant System Operator companion guides should improve clarity of what standards are consistent with the reasonable satisfaction of the system operator requirement. Relevant companion guides include:

- GL-EA-010 Companion Guide for Testing of Generating Assets;
- GL-EA-766 Companion Guide for Testing of Distribution Assets;
- GL-EA-716 Companion Guide for Modelling, and;
- GL-EA-404 Companion Guide for Commissioning.

Therefore, we are investigating the best method to include reference to this documentation.

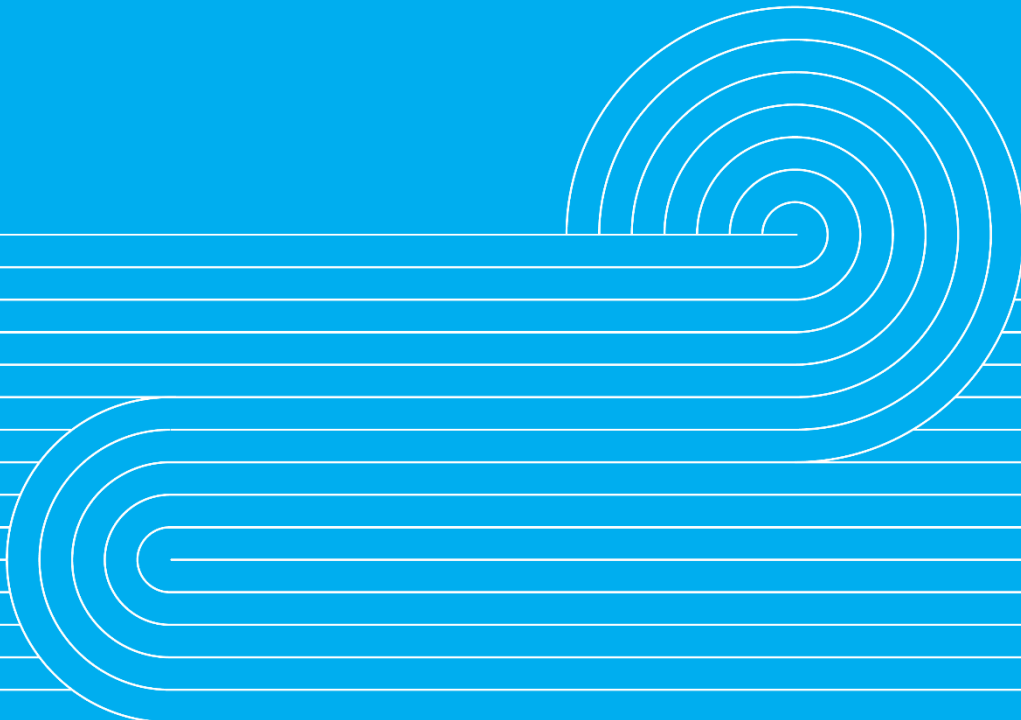
4.6 Interruptible Load Over Delivery

In the last Procurement Plan consultation round there was an item to Propose possible options to prevent the over-procurement of interruptible load². While we still see value in pursuing the options to address this issue, we haven't progressed this into draft Procurement Plan changes during this review.

We believe that in the interim clause 8.25(4) of the Code can be used to request information about the ability of interruptible load equipment to dynamically disarm and therefore determine the quantity of interruptible load that will respond to an under-frequency event regardless of whether it is dispatched or not.

² Refer to 2018-19 Review.

5.0 Details for Proposed Changes to the Procurement Plan



5.1 Proposed Changes to Clauses

Please consult the draft Ancillary Services Procurement Plan in Appendix 7.0 for proposed wording.

Proposed changes to clauses in the Procurement Plan

Existing Clause #	New Clause #	Description of change	Rationale
4	4	Reference to Code clause changing to reflect Code change. 8.43(1) has been changed to 8.43	House Keeping
28	28	Wording has been generalised to make the pre-contractual technical review a requirement for parties wishing to provide single provider frequency keeping as well as maintaining the current requirement for multiple provider frequency keeping.	Introducing consistency between the requirements for single and multiple provider frequency keeping.
51	51	Corrected the defined term from "Alternative Ancillary Service" to "Alternative Ancillary Service Arrangement".	House Keeping
58	58	Corrected the defined term from "Alternative Ancillary Service" to "Alternative Ancillary Service Arrangement".	House Keeping
A3	A3	The definitions of "MFK transition trading period" and "SFk transition trading period" (formerly "SFk return trading period") have been removed from this clause and added to Appendix D.	Improving clarity of the clauses and specificity of the definitions.
A4	A4	Simplified wording to clarify communication requirements for MFK and SFk transition trading periods.	Improving clarity of the clause

Existing Clause #	New Clause #	Description of change	Rationale
A5	A5	Simplified wording to clarify communication requirements for MFK and SFK transition trading periods.	Improving clarity of the clause
B3.1	B3.1	Additional wording added to define the timeframe within which a single provider frequency keeper must commence a response to eliminate a grid frequency error.	Currently the requirement for single provider frequency keeping is only specified in the companion guide. This change makes response time a contractual obligation.
B3.2	B3.2	Simplified wording to clarify the response rate requirement for single provider frequency keepers when the frequency is outside normal band.	The "normal band" is well defined and therefore it is unnecessary to define what is outside the normal band.
B3.3	B3.3	Added "act to" to clarify requirement for single provider frequency keepers to maintain frequency within normal band.	It is possible for single provider frequency keepers to be generating at the edge of their frequency keeping band and the frequency still exits the normal band.
B3.4	B3.4	Added "act to" to clarify requirement for single provider frequency keepers to eliminate grid frequency error.	It is possible for single provider frequency keepers to be generating at the edge of their frequency keeping band and not be able to eliminate the grid frequency error.
B6	B7	The requirement for frequency keeping equipment to be maintained in accordance with good industry practice has been relocated for consistence with the other services.	House Keeping.
B10.1	B10.1	Increased the monitoring requirements for FK output when providing single provider frequency keeping.	This aligns the monitoring requirement applied to multiple frequency keeping. Additionally, one second data is also the same granularity of SCADA data.

Existing Clause #	New Clause #	Description of change	Rationale
B10.2	B10.2	Increases the monitoring requirements for frequency when providing single provider frequency keeping.	This aligns the monitoring requirements with the granularity of SCADA data.
B10.3	B10.3	Introduces an accuracy requirement for single provider frequency keeping providers monitoring frequency time error.	This aligns with B10.3 with B10.1 and B10.2 which already contains accuracy ranges for each measurement.
B11	-	The requirement for single provider frequency keeping providers to retain data recorded by the monitoring equipment has been removed and merged with the same requirement for multiple provider frequency keepers. See New Clause 13.	Introducing consistency between the requirements for single and multiple provider frequency keeping.
B14	-	The requirement for multiple provider frequency keeping providers to retain data recorded by the monitoring equipment has been removed and merge with the same requirement for single provider frequency keepers. See New Clause 13.	Introducing consistency between the requirements for single and multiple provider frequency keeping.
B15	-	The requirement for multiple provider frequency keeping providers with block or station dispatch capabilities to be treated as allocated frequency keeping units has been moved to New Clause 14 in order to extend the requirement to single provider frequency keepers.	Introducing consistency between the requirements for single and multiple provider frequency keeping.
B17	B16	Updated frequency keeping offer requirements for consistency with the gate closure period as defined in Part 1 of the Code.	Improving clarity and consistency with Code definitions.
B19	B18	Replaced defined term: <i>single provider frequency keeping</i> with <i>back-up SFK</i> as the clause specifically refers to the ancillary services procurement contract schedule.	House Keeping.

Existing Clause #	New Clause #	Description of change	Rationale
-	B28	Introduces a requirement for frequency keeping units to be connected and able to perform frequency keeping from the start of a dispatched trading period.	To ensure the service is provided for the full period that the frequency keeping units are dispatched, without any lag.
B28A	B29	This clause has been updated to require that the baseline test conducted by frequency keeping providers prior to being dispatched must be to the reasonable satisfaction of the System Operator.	This addition prevents the System Operator from holding frequency keeping providers baseline testing to an unrealistic standard. This also maintains consistency with other special testing requirements.
B28B	B30	Clarifying wording to emphasise that four yearly baseline testing is specific to multiple provider frequency keeping.	This change hasn't resulted in any functional change but has clarified the frequency of baseline testing required for multiple provider frequency keeping providers.
B29	B31	Clarifying wording to emphasise that six monthly baseline testing is specific to single provider frequency keeping.	This change hasn't resulted in any functional change but has clarified the frequency of baseline testing required for single provider frequency keeping providers.
-	B35	Introduces a requirement for ancillary service agents to provide results of frequency keeping testing to the System Operator.	This prevents the System Operator from having to send out request notices each time an Ancillary Service Agent conducts testing at an FK site.
B32	B36 – B39	Clause B32 has been split into B36 – B39 for clarity.	House Keeping.

Existing Clause #	New Clause #	Description of change	Rationale
-	B37.2.1	Introduces performance requirements for <i>interruptible load other than that provided by battery energy storage systems</i> providing fast instantaneous reserve.	This shifts the fast instantaneous reserve performance requirements for <i>interruptible load other than that provided by battery energy storage systems</i> from the definition of interruptible load under Part 1 of the Code.
-	B37.2.2	Introduces performance requirements for <i>interruptible load other than that provided by battery energy storage systems</i> providing sustained instantaneous reserve.	This shifts the sustained instantaneous reserve performance requirements for <i>interruptible load other than that provided by battery energy storage systems</i> from the definition of interruptible load under Part 1 of the Code.
-	B37.4	Introduces response requirements for <i>generation reserve, and battery energy storage systems</i> providing interruptible load.	This extends these requirements to all excluded generators and battery energy storage systems offering or intending to offer generation reserve, and/or battery energy storage systems providing interruptible load. These requirements are also currently located in Appendix A of Technical Code A.

Existing Clause #	New Clause #	Description of change	Rationale
-	B37.5	Introduces requirements for <i>generation reserve, and battery energy storage systems</i> providing interruptible load to remain connected to the grid.	This extends these requirements to all excluded generators and battery energy storage systems offering or intending to offer generation reserve, and/or battery energy storage systems providing interruptible load. These requirements are also currently located in Appendix A of Technical Code A.
B32.2	B38	A change has been made to this clause to specify that an ancillary service agent equipment providing instantaneous reserve can provide additional supply and reduce demand with the same equipment.	This change has been made to incorporate battery energy storage systems.
B33	B40	Changes have been made to specify that this clause is for <i>interruptible load other than that provided by battery energy storage systems</i> .	This change has been done to exclude battery energy storage systems from performing with existing interruptible load requirements.
B35	B42	Changes have been made to specify that this clause is for <i>generation reserve, and interruptible load provided by battery energy storage systems</i> .	This change has been made to exclude battery energy storage systems from performing with existing interruptible load requirements.
B36	-	The definitions of UFE time and trip time have been removed from this clause and added to Appendix D.	This has been done to remove the clause and add clarity to the definitions.

Existing Clause #	New Clause #	Description of change	Rationale
B37	B43	This clause has replaced the existing B36 to increase the required monitoring resolution for both fast and sustained instantaneous reserves. Additionally, the requirements from Existing Clause B38 have been added to New Clause 43 for simplicity.	This change has been made to combine three of the monitoring requirement clauses for instantaneous reserves into a single clause.
B38	-	Combined into New Clause 43. Additionally, this clause has been altered and the extend the timeframe (pre and post -event) an ancillary services agent must provide data for.	This change has been made to align the content contained within New Clause 43 with current event evaluation processes.
B45	B50	Reducing the frequency of end-to-end testing on equipment used to provide interruptible load other than battery energy storage systems to once every 24 months.	This decreases the testing requirements without unduly affecting performance of the service.
B46	B51	Clarifying wording has been added to refer scope of end-to-end tests back to B47. This addition hasn't made a functional change.	House Keeping.
B46A	B52	Changes have been made to specify that this baseline testing clause is for <i>generation reserve, and interruptible load provided by battery energy storage systems</i> .	This change has been made to ensure battery energy storage systems providing interruptible load comply with the existing special testing requirements for generation reserve.
-	B53	This requirement has been added to require ancillary service agents to conduct a baseline test if any changes are made to their equipment that could impact their instantaneous reserve performance.	This change is needed as the System Operator needs visibility of the performance capability of reserves at all times. There is a significant risk if the capability of reserves changes within the contract period without the system operator being aware.

Existing Clause #	New Clause #	Description of change	Rationale
B46B	B54	Changes have been made to specify that this baseline testing clause is for <i>generation reserve, and interruptible load provided by battery energy storage systems</i> and that baseline tests must be used to validate the asset capability statement modelled response.	This change has been made to ensure battery energy storage systems providing interruptible load comply with the existing special testing requirements for generation reserve.
-	B57	Introduces requirement for ancillary services agents to provide the result of instantaneous reserve testing or under frequency event responses to the System Operator.	This avoids the System Operator from having to send out request notices each time an Ancillary Service Agent conducts testing on instantaneous reserve equipment or responses to an under-frequency event.
B54	B63	Reducing the frequency of over frequency reserve baseline testing to once every 24 months.	This decreases the testing requirements without unduly affecting performance of the service.
-	B66	Introduces requirement for ancillary services agents to provide the result of over frequency reserve testing to the System Operator.	This prevents the System Operator from having to send out request notices each time an Ancillary Service Agent conducts testing on over frequency reserve equipment.
-	B74	Introduces requirement for ancillary services agents to provide the result of voltage support testing to the system operator.	This prevents the System Operator from having to send out request notices each time an Ancillary Service Agent conducts testing on voltage support equipment.

Existing Clause #	New Clause #	Description of change	Rationale
B66	B82	Unnecessary wording has been removed regarding the equipment subjected to monitoring requirements as well as an addition stating that an ancillary service agent must advise the system operator upon rectification of a failure preventing the provision of black start.	This aligns the requirements for black start with current operational practices.
B67	B83	Simplified wording to clarify baseline testing requirements for black start equipment.	Improving clarity of the clause.
B69	B84	This clause has been moved slightly for logical flow of the black start special testing requirement clauses. No functional changes have been made to this clause.	House Keeping.
B68	B85	Removing unnecessary wording about baseline tests for equipment used to provide or monitor black start. No functional changes have been made to this clause.	Improving clarity of the clause.
C24	C24	The definitions of baseline test has been removed from this clause and added to Appendix D. This definition has also changed.	Improving clarity of the clauses and specificity of the definitions.
C25.1	C25.1	The definitions of on-demand test has been removed from this clause and added to Appendix D. This definition has also changed.	Improving clarity of the clauses and specificity of the definitions.

5.2 Proposed Changes to Definitions

Proposed changes to definitions in the Procurement Plan

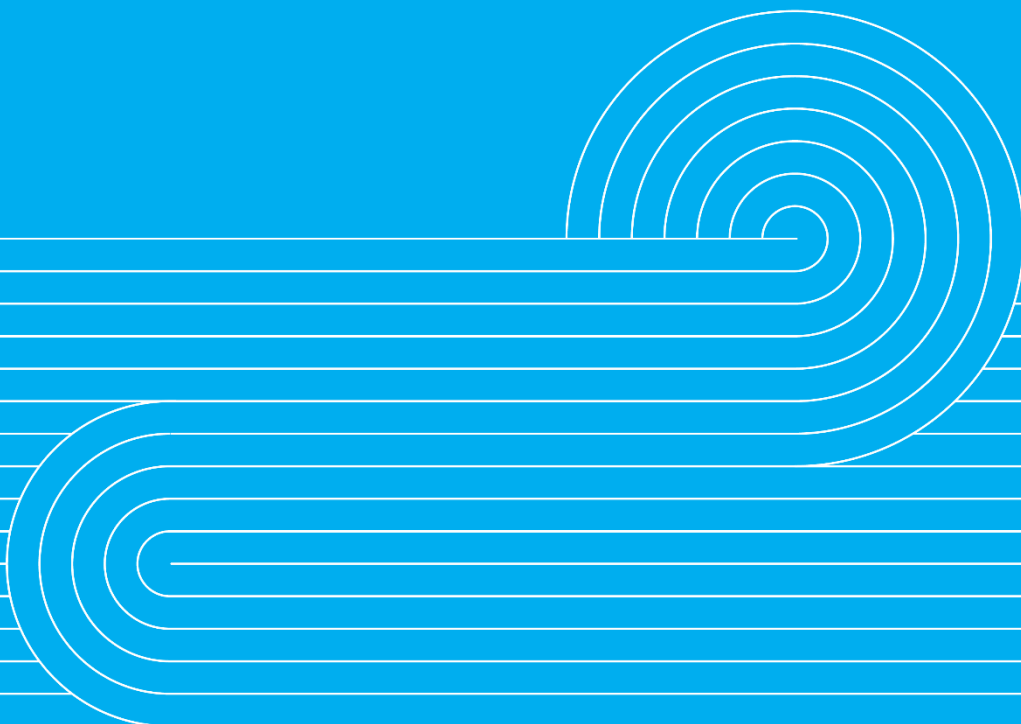
Definition	Description of change	Rationale
allocated frequency keeping unit	This definition has been removed as it is no longer used within the procurement plan.	House Keeping.
baseline test	This definition has been relocated for C24 with additional information for the sake of clarity.	This definition was changed to remove a circular reference with on demand test and end-to-end test.
battery energy storage system	Definition was added to specify a subgroup of energy storage system as defined by the Code.	The requirements in the procurement plan have only been contemplated for energy storage systems with an electro-chemical storage component.
end-to-end test	Simplified wording for clarity.	Definition changed to remove a circular reference with baseline test and on demand test.
generating unit	Definition has been removed as changes to the Code has rendered the definition unnecessary.	House Keeping.
MFK period	This definition has been removed as it is not used within the Procurement Plan. The definition will be added to the ASPC MFK schedule.	House Keeping.
MFK technical review	This definition has been removed as it is no longer used within the Procurement Plan.	House Keeping.

Definition	Description of change	Rationale
MFK transition trading period	This definition has been relocated clause A3.1 to Appendix D.	Improving clarity of the clauses and specificity of the definitions.
on demand test	This definition has been relocated for C25.1 adding that it is at the specific request of the System Operator	Definition changed to remove a circular reference with baseline test and end-to-end test.
SFK period	This definition has been removed as it is not used within the procurement plan. The definition will be added to the ASPC back-up SFK schedule.	House Keeping.
SFK transition trading period	This definition has been renamed from SFK return trading period. Additionally, has be relocated from clause A3.1 to Appendix D.	Improving clarity of the clauses and specificity of the definitions.
single provider frequency keeping period	Removing unnecessary wording adding a minimum number of trading periods.	It is unlikely that a single provider frequency keeping provider will provide single frequency keeping for 24 trading periods in a continuous 30 day period. Therefore, this portion of the definition is being removed.
trip frequency	Changes have been made to this definition to exclude battery energy storage system.	This change has been done to ensure battery energy storage systems are subject to UFE time rather than trip time.
trip time	This definition has been relocated clause B36.2 to Appendix D. Additional changes have been made to specify trip time only relates <i>to interruptible load other than that provided by battery energy storage systems</i>	This change has been done to ensure battery energy storage systems are subject to UFE time rather than trip time.

Definition	Description of change	Rationale
UFE time	This definition has been relocated clause B36.1 to Appendix D.	Improving clarity of the clauses and specificity of the definitions.



6.0 Questions



Do you agree with the proposed changes to the:

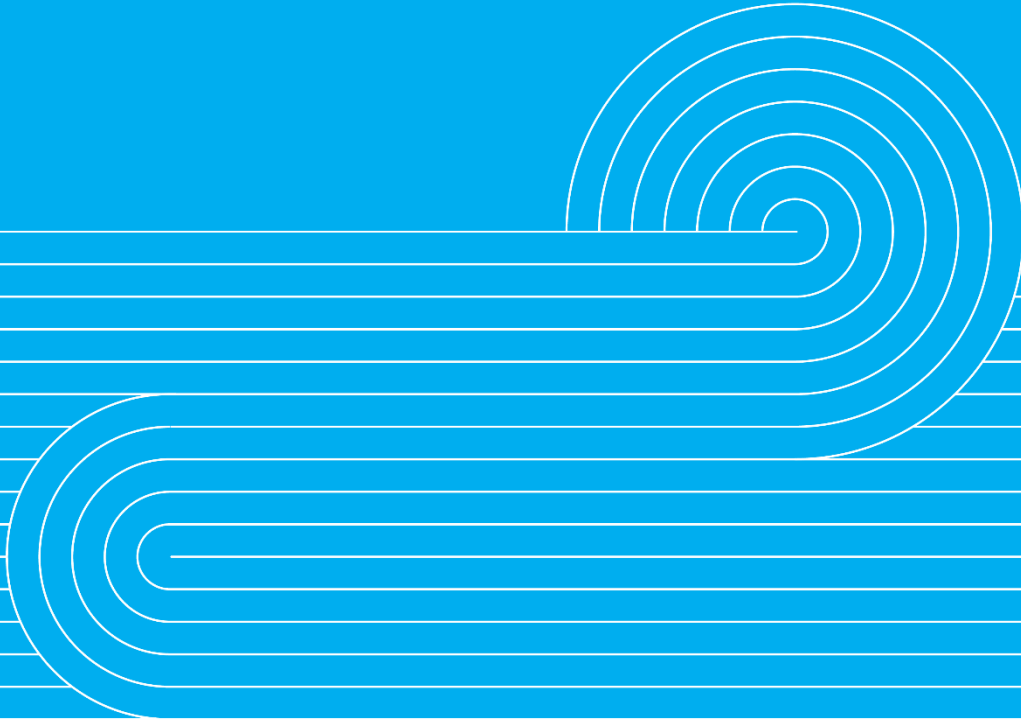
- Q1. frequency keeping requirements? [Section 3.2]
- Q2. instantaneous reserve requirements? [Section 3.3]
- Q3. over frequency reserve requirements? [Section 3.4]
- Q4. voltage support requirements? [Section 3.5]
- Q5. black start requirements? [Section 3.6]

If you don't agree, please comment on why.

What comments do you have on the intended future changes for:

- Q6. single provider frequency keeping provision methodology? [Section 4.1]
- Q7. single provider frequency keeping performance requirements? [Section 4.2]
- Q8. interruptible load over-delivery? [Section 4.3]
- Q9. classifications for instantaneous reserves? [Section 4.4]
- Q10. additional requirements for tail water depressed reserve? [Section 4.5]
- Q11. incorporating references to companion guides? [Section 4.6]

7.0 Appendices



7.1 Draft AS Procurement Plan (Clean)

Refer to document titled: *Procurement Plan 2022 - Clean*.

7.2 Draft AS Procurement Plan (Marked up)

Refer to document titled: *Procurement Plan 2022 - Marked Up*.

