Proposed changes to Secure System Guidelines

Consultation paper

PowerWater

Introduction

Power and Water Corporation in its capacity as the Power System Controller is seeking to make changes to provisions in the Secure System Guidelines (SSG) that relate to document structure and System Frequency Guidelines.

Section 3.5 of the System Control Technical Code (SCTC) prescribes obligations of the System Controller regarding the issuing of the SSG (in accordance with clause 3.5.1) and amendments of the SSG (in accordance with clause 3.5.2), as well as requirements for consultation with System Participants and Interested Persons associated to the issuing, amending, varying, or replacing the SSG.

This paper has been prepared to assist in facilitating consultation with System Participants and Interested Persons. It summarises the scope amendments being proposed as well as some key consultation questions that will assist in finalising the changes prior to issuing an updated version of the SSG.

The revised version of the SSG is provided for further consideration as part of this consultation. Furthermore, a suite of summary discussion papers is published, and these contain further detail and rationale for the application of Frequency Operating Standards and methodologies proposed to support the implementation of contemporary frequency management across the regulated power systems.

Rationale for amendments

The scope of this proposed SSG amendment version 5.0 is limited to frequency management, structural amendments and updating of references where these have been superseded since publication of the SSG version 4.2 in April 2020. The Power System Controller proposed to undertake consultation of the following as being a central theme of the update:

1. Application of Frequency Operating Standards and maximum credible contingency limits.
2. Amendment to frequency control methodologies and enabling of Frequency Control Ancillary Services including Inertial Frequency Control Ancillary Service (I-FCAS), Contingency Frequency Control Ancillary Service (C-FCAS) and the Regulation Frequency Control Ancillary Service (R-FCAS).

The key drivers behind the proposed amendments are as follows:

- The existing format and structure of the SSG is dated and does not align with the structure and format of technical codes. Restructuring the SSG into clearly identified sections makes for an easier to reference guideline for all System Participants.
- There are many cross references and document references identified in the existing version of the SSG that are either obsolete or have been superseded. Updating these references provides for an up-to-date guideline that remains consistent with current versions of reference documents.
- Frequency management has been the subject of substantial development over the past 5 years across the electricity industry. Clear guidelines have been established regarding consistent application of Power System Operating Frequency principles as defined within the Network Performance Standards in the Network Technical Code. The Power System Controller considers it important to comprehensively describe the application of Frequency Operating Standards within the SSG to provide greater clarity for System Participants.
- The Power System Controller has updated and applied FCAS principles to modernise the management of frequency that enables greater participation of a wider array of supply side resources, including renewable generators, battery storage and other technologies. The Power System Controller has developed and implemented contemporary methods to determine, accredit and schedule the provision of frequency control ancillary services (FCAS) across regulated power systems. This amendment to the SSG expedites the long-awaited transition from the increasingly obsolete Spinning Reserve policy to FCAS management for the Darwin-Katherine Power System (DKPS) and staging the transition for Alice

Springs and Tennant Creek Power Systems. This is a meaningful change that is required to enable the orderly transition of the regulated power systems toward inverter-based renewable technologies into the future.

The proposed amendments to the SSG include changes to frequency standards and frequency control methodologies which have been consulted extensively with stakeholders over several years and do not present foundationally new concepts, nor is it considered that any of these amendments adversely impact licensees. Other proposed amendments to the SSG are primarily editorial and structural in nature, aimed at improving the clarity of the document, its application and consistency with other applicable regulatory instruments.

As such, NTESMO intends to minimise the duration of the consultation aligned to Chapter 8.9.3 (NT NER version 125) which describes an expedited rules consultation procedure and encourages stakeholders to submit responses as soon as practicable so that the amendments could be reviewed, updated, and finalised and published in accordance with the indicative schedule below.

Summary of proposed amendments

The proposed SSG amendments cover the restructuring, reformatting, and updating of references within the guideline including the redevelopment of guidelines for System Frequency.

Restructuring of the Secure System Guidelines

The SSG has been restructured into sections re-aligned to collate guidelines for System Frequency, System Adequacy, System Voltage, Power System Operations, and administrative elements. The core content of the SSG has been retained, except for the redrafting of guidelines for System Frequency. Cross references to documents and procedures have been updated to the most recent versions.

Guidelines for System Frequency

Guidelines for System Frequency have been developed and collated to include:

- The operational application of Frequency Operating Standards;
- Defining maximum credible contingency limits;
- Application of Inertia-Frequency Control Ancillary Service (I-FCAS);
- Application of Contingency-Frequency Control Ancillary Service (C-FCAS); and
- Application of Regulating-Frequency Control Ancillary Service (R-FCAS).

Supporting documents attached

The SSG amendments include describing methodologies for the determination, accreditation, and provision of FCAS across its constituent elements. In addition to the amended SSG, a suite of discussion papers has been attached to the consultation that provide further insight into the methodologies that support the application of FCAS for the DKPS, the manner in which these may be applied and a staged implementation approach to each. The suite of documents accompanying this invitation for industry feedback include:

1. **Proposed Secure System Guidelines Version 5.0** – capturing the extent of amendments proposed.
2. **Application of Frequency Operating Standards** – Discussion Paper providing the approach proposed for the application of frequency operating standards prescribed in the Network Technical Code.

3. **C-FCAS Methodology** – Discussion Paper expanding upon system frequency response (SFR) model as a basis for assessing system requirements, accrediting service providers, and determining reserves required in a dynamic manner.
4. **R-FCAS Methodology** – Discussion Paper proposing a contemporary method for determining the regulating frequency requirements across the DKPS as well as providing results of data analysis from previous periods that have been used to determine seasonal requirements.

The Power System Controller has consolidated the aspects presented in each of these discussion papers into the revision of the SSG.

Implementation

Whilst considerable research and development has already been undertaken in transitioning toward FCAS management, the methodologies discussed in the suite of papers accompanying the amended version of the SSG are yet to be fully applied and implemented across the real-time operations of the DKPS. Implementation would be staged for each of the regulated power systems commencing with the DKPS, where there is likely to be the largest operational efficiencies coupled with improved power system security.

The transition from the spinning reserve policy to the FCAS methodology for each Regulated Power Systems will follow due process that requires the development and integration of several applications whilst ensuring that the power system security is maintained throughout the transition. The implementation process includes:

- Research and development of the methodology and simulation thereof utilising historical data.
- Development of modernised operational systems, tools, and applications for FCAS management.
- Concurrent consultation of the methodology together with proposed amendments to the Secure System Guidelines (SSG).
- Accreditation of supply-side infrastructure including generating units providing the services.
- Trial implementation of the application of FCAS management (in parallel to the prescribed spinning reserve limits).
- Operational readiness preparations, fine tuning followed by full operationalisation.
- Formal notification to licensed participants of final transition to FCAS management.
- Retirement of the obsolete spinning reserve limits giving effect to the revised SSG.

Following successful implementation of FCAS across DKPS, a similar process will be followed for Alice Springs and Tennant Creek power systems to the extent necessary. Implementation of FCAS management across the regulated power systems is likely to span a considerable period and it is NTESMO's intent to keep Licensed Participants informed of progress toward final transition.

Consultation questions

The following questions are provided as a prompt for stakeholders and interested parties regarding areas that are of particular interest to Power System Controller:

- Does the amendment to the format and structure of the SSG create a more transparent and effective guideline? Are there any additional recommendations regarding format and structure of the SSG that should be incorporated as part of this amendment and for any additional proposed format amendments, what is the rationale for including these within this amended version of the SSG?
- Does the detailed prescription of the application of Frequency Operating Standards across the regulated power systems provide sufficient clarity and guide the application of frequency controls to maintain frequency? Do stakeholders require any further guidelines regarding the application of

Frequency Standards within the SSG? If so, what are these additional requirements and what is the rationale for including these?

- Do stakeholders agree with the method and process for the application of FCAS management for the DKPS? If not, what practically implementable alternatives are proposed for application of FCAS?
- Is the sequencing and the staged scheduling of FCAS (based upon the initial application within the DKPS) for all regulated power systems considered practicable? Is the recommended way in which it is proposed to inform Industry of the transition deemed sufficient for System Participants? Are there any alternative proposals for implementation and notification thereof?
- Is the C-FCAS System Frequency Response (SFR) accreditation framework and associated application considered practicable for the DKPS? Are there any alternatives recommended and if so, what is the rationale for recommending an alternative to the proposed methodology?
- Is the R-FCAS guideline including the System Load Rate of Change methodology considered practicable for the DKPS? Are there any alternatives recommended and if so, what is the rationale for an alternative to the proposed methodology?

Consultation and implementation timetable

The indicative schedule for this consultation is presented in the table below:

STAGE	COMMENCE	COMPLETE	EXPLANATION
Release of consultation pack	11 July 2025	4 August 2025	Provides stakeholders at least 20 business days as per clause 8.9.3 (a) (NT NER)
Review and consolidation of responses	5 August 2025	22 August 2025	N/A
Review responses and finalise of SSG Version 5	5 August 2025	19 September 2025	Sufficient time set aside to update and revised proposed amendments taking consideration of stakeholder responses.
Publish responses and commentary Publish SSG version 5	N/A	22 September 2025	Final publication and notification on NTESMO's website
Implementation of SSG version 5	22 September 2025	To be determined	Implementation is staged and the final implementation is contingent upon the operationalisation of applications and industry operational readiness
Industry updates regarding implementation	1 December 2025	To be determined	Updates to be published on NTESMO's website until post final transition

How to make a submission

Submissions on the proposed amendments are invited by 4 pm ACST 4 August 2025 and should be electronically submitted via email to market.operator@powerwater.com.au.

For the purpose of transparency NTESMO will publish all submissions received in full. Should a stakeholder consider sections of their submission as confidential, a separate public version of the submission should be provided to NTESMO for publication with clear rationale for redaction of elements of their submission.