

NSCAS DESCRIPTION & QUANTITY PROCEDURE DETERMINATION AND REPORT

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1 Background

AEMO is responsible for managing *power system security* and reliability of *supply* in the *National Electricity Market (NEM)*. To do this, it is required to ensure that sufficient *network* assets are in service, *generation* is *dispatched* and *ancillary services* are acquired and *dispatched*.

NSCAS are *non-market ancillary services* acquired to control the *active power* or *reactive power* flow into or out of a *transmission network* in order to:

- maintain *power system security* and reliability of *supply* in accordance with the *power system security and reliability standards*; and
- maintain or increase its power transfer capability to maximise the present value of net economic benefit to all those who produce, consume or transport electricity in the *market*.

AEMO commenced consultation on the NSCAS Description and NSCAS Quantity Procedure on 5 August 2011 and received five submissions in response to the First Stage Notice of Consultation.

After considering the submissions, AEMO concluded that the NSCAS Description and NSCAS Quantity Procedure should include the following¹:

- NSCAS Description
 - Three types of NSCAS in terms of the service provided, namely, services that:
 - Increase the secure loading of the *network*;
 - Control the *network voltages* within acceptable limits including *voltage stability*; and
 - Improve transient stability limits of the *network*.
 - The NSCAS Description will be developed with similar levels of description contained in the existing network control ancillary service (NCAS) Description².
- NSCAS Quantity Procedure
 - The procedure for determining each type of NSCAS will consider the requirements for each service.
 - AEMO will provide a similar level of detail to that in the existing NCAS Quantity Procedure³.
 - More information on the approach and assumptions of the market benefits test will be provided in the NSCAS Quantity Procedure and the NTNDP; and
 - The NSCAS Quantity Procedure will emphasise the need for benchmarking the market benefits test.

AEMO commenced the second stage of consultation on the NSCAS Description and NSCAS Quantity Procedure on 25 October 2011 and received five submissions in response to the notice of Second Stage of Consultation.

After considering the submissions, AEMO concluded that the final NSCAS Description and NSCAS Quantity Procedure should be amended to include the following:

¹ The submissions received for first stage of consultation and AEMO's response to the issues raised in the submissions are published in AEMO website: <http://www.aemo.com.au/electricityops/0168-0011.html>

² The existing NCAS Description will be superseded by the NSCAS Description.

³ The existing NCAS Quantity Procedure will be superseded by the NSCAS Quantity Procedure.

- NSCAS Description
 - The Transient Stability Ancillary Services (TSAS) type of NSCAS will be replaced by a new type called Transient and Oscillatory Stability Ancillary Services (TOSAS) to include oscillatory stability ancillary services as well as transient stability;
 - A number of other changes have been made to improve the clarity of the NSCAS Description; and
- NSCAS Quantity Procedure
 - A number of changes have been made to improve the clarity of the NSCAS Quantity Procedure.

This document outlines the responses to the consultation with discussion to understand AEMO's conclusions for the final determination. All documents relating to this consultation process and submission received are available on AEMO's website.

2 Consideration of Submissions

First Stage of Consultation

AEMO received five submissions in response to its First Stage Notice of Consultation, one from each of the following: Hydro Tasmania, International Power GDF Suez, Snowy Hydro, TransGrid and Transend.

All submissions were published on AEMO's website prior to the date the Draft Determination and Report was released.

Sections 4 and 5 summarise the issues raised in the Issues Paper⁴, key points provided in the submissions, AEMO's response to these key points and AEMO's draft determination of the NSCAS description and NSCAS quantity procedure. Appendix 1 details AEMO's specific response to each of the issues raised in the submissions to the first stage consultation.

Second Stage of Consultation

AEMO received five submissions in response to its Second Stage Notice of Consultation, one from each of the following: Hydro Tasmania, International Power GDF Suez, TransGrid, Transend and TRUenergy.

All submissions were published on AEMO's website prior to the date this Determination and Report was released.

Sections 6 and 7 and Appendix 2 summarise the issues provided in the submissions, AEMO's response to these points, and AEMO's determination of the NSCAS description and NSCAS quantity procedure.

⁴ Available at www.aemo.com.au/electricityops/0168-0012.pdf

3 First Stage Consultation Responses to the NSCAS Description Questions

3.1 Issue 2.1: How is each type of NSCAS to be defined in the NSCAS Description?

3.1.1 Submissions

The Issues Paper proposed four options on how to define each type of NSCAS for the purposes of the NSCAS Description:

1. Use the present NCAS Description as the basis for the new NSCAS Description;
2. Describe each type of NSCAS in terms of the service provided;
3. Describe NSCAS in terms of the methods that are used for providing it; and
4. A combination of option 2 and option 3.

Snowy Hydro supports option 1, TransGrid and Transend support option 2, while Hydro Tasmania supports option 4.

3.1.2 AEMO response

AEMO prefers option 2 as it offers the following benefits:

- It is comprehensive and flexible enough to include all potential methods of supplying a service. It is focussed on the service requirements without specifying the method of meeting the requirement;
- It allows innovative new services to develop;
- It does not exclude any potential methods of delivery of the services; and
- It reduces the need for updates to the NSCAS Description resulting from technological changes in either the type of service or method of delivery.

AEMO recognises that option 4 can combine the advantages of options 2 and 3, allowing the NSCAS Description to describe each type of NSCAS in terms of the service provided, while also allowing the quantity of service to be assessed using methods of delivering the services where necessary. AEMO does not consider that each method of delivering a service should be described in the NSCAS Description.

3.1.3 Outcome

AEMO proposes to adopt option 2 and specify 3 types of NSCAS, namely, services that:

- Increase the secure loading of the *network*;
- Control the *network voltages* within acceptable limits including *voltage* stability; and
- Improve transient stability limits of the *network*.

3.2 Issue 2.2: What constitutes a detailed description for each type of NSCAS for the purposes of the NSCAS Description?

3.2.1 Submissions

Hydro Tasmania, TransGrid and Transend all indicated that the level of description used in the existing NCAS Description⁵ is adequate for describing the types of NSCAS in the NSCAS Description.

No one suggested that any other levels of description be used in the NSCAS Description.

3.2.2 AEMO response and outcome

AEMO will develop the NSCAS Description with similar levels of description used in the existing NCAS Description.

4 First Stage Consultation Responses to the NSCAS Quantity Procedure Questions

4.1 Issue 3.1: What is a sufficient level of detail for defining the NSCAS quantity requirements?

4.1.1 Submissions

Hydro Tasmania, Snowy Hydro and Transend submitted that the generic quantity procedure outlined in section 3.1.3 of the Issues Paper is sufficient for determining the quantity of NSCAS for the purposes of the NSCAS Quantity Procedure.

4.1.2 AEMO response

AEMO proposes quantity procedures for each type of NSCAS based on the generic process steps indicated in the generic quantity procedure from section 3.1.3 of the Issues Paper in light of the requirements for each service.

4.1.3 Outcome

The quantity procedure for each type of NSCAS will take into account the requirements for each service.

4.2 Issue 3.2: What market benefits test should be used in the NSCAS Quantity Procedure?

4.2.1 Submissions

Submissions addressed three key issues:

1. The need for additional information on the methodology and the assumptions to be used in the market benefits analysis, to allow interested parties to recreate or apply the same analysis (TransGrid and Transend).
2. The need to benchmark the methodology/approach (TransGrid) and to demonstrate that the Monte-Carlo approach using probabilistic *generation outages* converges (TransGrid). It was noted that the timing of *generator outages* are of particular

⁵ NCAS Description located at www.aemo.com.au/electricityops/0160-0005.pdf

importance and that the treatment of planned *generator outage* assumptions may be of concern (Transend).

3. Modelling additional benefits compared to those AEMO had suggested (Snowy Hydro, TransGrid and Transend).

4.2.2 AEMO response and outcome

The responses to the three different issues raised are:

1. AEMO agrees that sufficient information on both the approach and assumptions should be provided in the quantity procedure.
2. AEMO agrees that benchmarking is important. The NSCAS Quantity Procedure will be developed to emphasis this.
3. AEMO is not convinced that more benefits than those described should be considered. The economic benefit analysis to be undertaken by AEMO for the purposes of the NTNDP is meant to be a high level NEM-wide screening study where NSCAS options for relieving a *network constraint* could be economic. The analysis will provide the benefits of relieving a *constraint* without regard to the method of relieving it or the cost associated with the relieving it. Considering any additional benefits will require information such as NSCAS options available and their costs, which will not be available at the time of making the assessment. Further, undertaking such an analysis on a yearly basis could be very costly. Rather, such benefits should be considered by the TNSPs when undertaking RIT-T studies or pre-feasibility studies (should they be undertaken before committing to a RIT-T study) for the procurement of the NSCAS identified in the NTNDP.

5 Second Stage Consultation Responses to key NSCAS Description Issues

There are 10 issues raised in the stage 2 consultation for the NSCAS Description. One issue is discussed below. The other issues are discussed in Appendix 2:

5.1 Issue: Expand the Transient Stability Ancillary Service to include oscillatory stability

5.1.1 Submissions

TransGrid and Transend indicated that the Transient Stability Ancillary Service (TSAS) be replaced with a Network Stability Ancillary Service (NSAS) to allow small signal stability problems to be addressed.

5.1.2 AEMO response and outcome

AEMO agrees that there could be circumstances where a NSCAS could be procured to enhance network transfers limited by an oscillatory stability (small signal stability) *constraint*. AEMO agrees to expand the TSAS area of the NSCAS description as a suitable place to accommodate this issue, however it should be called “Transient and Oscillatory Stability Ancillary Service” (TOSAS). Calling it “NSAS” could lead to confusion as to how *voltage* stability is addressed. *Voltage* stability is part of VCAS.

AEMO will rename TSAS, as TOSAS, with the description expanded to allow oscillatory stability to be included.

6 Second Stage Consultation Responses to key NSCAS Quantity procedure Issues

There are 16 issues raised in the stage 2 consultation for the NSCAS Quantity Procedure. One issue is discussed below. The other issues are discussed in Appendix 2:

6.1 Issue: AEMO to undertake the same economic benefits test as TNSPs

6.1.1 Submissions

TransGrid and Transend commented that the proposal for AEMO to use a different economic benefits test (to the RIT-T required by TNSPs) gives rise to the risk of spurious NSCAS gaps being identified through different economic modelling methods.

It is recommended that AEMO undertake the same economic benefits test as TNSPs.

6.1.2 AEMO response and outcome

AEMO agrees that it is important to align the economic benefits test used by AEMO during the NTNDP process with the economic benefit test used by a TNSP. It should be recalled however, that AEMO is undertaking a screening analysis, and the test it performs cannot supplant the economic test a TNSP would need to perform to compare the options available to fulfil the need identified in the NTNDP. At the time of identification and publication in the NTNDP of a need AEMO will not be carrying out an in-depth economic analysis, with the accuracy and comprehensiveness required for justifying procurement of a *network support agreement* or investment in new assets.

AEMO will amend the NSCAS Quantity Procedure appropriately.

7 Determination

AEMO determines the NSCAS Description in the form attached in Attachment A.

AEMO determines the NSCAS Quantity Procedure in the form attached in Attachment B.

APPENDIX 1 – FIRST STAGE CONSULTATION SUBMISSIONS

Appendix 1 tables AEMO’s response to submissions in response to the questions outlined in the Issues Paper.

Issue 2.1 Of the options described, is there a preferred option for describing types of NSCAS in the NSCAS Description? If not, is there another option? Please provide reasons for supporting an option.

Organisation	Submission	Response
Hydro Tasmania	Hydro Tasmania would prefer option 4 (being a combination of options 2 and 3) as, by and large, the market (or system) issue/ constraint is normally understood.... Option 4 provides the facility to identify the required solution and the appropriate mitigation means. It is believed that with this option quantification of the amount of service would also be readily achievable.	Noted. AEMO prefers that types of NSCAS in the NSCAS Description are described in terms of their service provided. Refer to section 4.1
Hydro Tasmania	<p>Hydro Tasmania proposes a number of possible services that could be defined as NMAS, which include NSCAS, such as:</p> <ul style="list-style-type: none"> Machine inertia – where system security requires additional inertia and machines are run in synchronous condenser (SCO) mode specifically to provide the additional inertia. Additional fault level – where system fault level constraints are resolved by running additional SCO. Control of generator AVR by TNSP as part of an automated voltage control scheme – Voltage constraints and network losses could be substantially reduced through voltage control schemes that coordinate generator reactive power together with other reactive compensation devices and methods. Network control system protection schemes – permitting loading of N-1 transmission line pairs 	<p>Noted. AEMO proposes that the types of NSCAS for use in the NSCAS Description are:</p> <p>Services that:</p> <ul style="list-style-type: none"> Increase the secure loading of the <i>network</i>; Control <i>network voltages</i> within acceptable limits including <i>voltage stability</i>; and Improve transient stability limit of the <i>network</i>. <p>Machine inertia could be a method applied to meet the NSCAS type “to increase the secure loading of the network”, but would not be recognised as a separate type of NSCAS.</p> <p>Additional fault level could be a method for providing the NSCAS type of increasing the secure loading of the network, but would not be recognised as a separate type of NSCAS.</p> <p>Automated <i>voltage</i> control schemes could be a method for providing one or more of the NSCAS types mentioned above, but would not be recognised as a separate type of NSCAS.</p> <p><i>Network</i> control system protection schemes could be methods used to provide services to</p>

Organisation	Submission	Response
	<p>to almost continuous rating through a generation shedding scheme.</p>	<p>increase the secure loading of the <i>network</i>, but would not be recognised as a separate type of NSCAS.</p>
<p>Hydro Tasmania</p>	<p>Some further possible NSCAS items (not exhaustive) could be:</p> <ul style="list-style-type: none"> • Fault level or voltage support in generation mode (i.e. plant dispatched solely to meet NSCAS need) • Various network loading solutions provided by generation dispatched to satisfy specific TNSP plant or system requirement; • Various system protection schemes (generator tripping or run-back) 	<p>Noted. Fault level or <i>voltage</i> support in <i>generation</i> mode could be a method for providing one or more of the NSCAS service types mentioned above, but would not be recognised as a separate type of NSCAS.</p> <p><i>Network</i> loading solutions provided by <i>generation dispatched</i> to satisfy specific TNSP <i>plant</i> or system requirements could be methods used to provide services to increase the secure loading of the <i>network</i>, but would not be recognised as a separate type of NSCAS.</p> <p>Various system protection schemes could be methods used to provide services to increase the secure loading of the <i>network</i>, but would not be recognised as a separate type of NSCAS.</p>
<p>IP-GDF Suez</p>	<p>The options set out in relation to the description of services are seeking to serve two separate purposes, and in the process risk being ineffective for either purpose</p>	<p>AEMO believes that the purpose to which a NSCAS will be put is described by the service it delivers. The benefits expected fall into two categories. Firstly the service is needed to ensure power system security, or secondly to maximise the market benefits.</p> <p>A description of the performance required of service providers would be specified in a tender document.</p>
<p>Snowy Hydro</p>	<p>Snowy Hydro supports option 1 of using the present NCAS Description as the new NSCAS Description. In summary, Snowy Hydro supports the current NCAS definitions on the basis that:</p> <ul style="list-style-type: none"> • These definitions are clear and unambiguous; • The definitions do not discriminate against any existing or potential services that may meet these definitions; and • Provides a clear cost/ benefit criteria to enhance network transfer capability when the benefit of spot market trade exceeds the cost of the NLCAS and/ or RPAS. 	<p>Noted. AEMO believes that option 1 as it is currently envisaged may not be adequate. For example, NLCAS is geared to using very short-term current ratings of <i>transmission lines</i> to increase <i>active power</i> flow into or out of a <i>transmission</i> element. It would be difficult to integrate a service that increases a transient stability limit with the purpose of increasing the <i>active power</i> flow into or out of a <i>transmission</i> element in the NLCAS Description.</p> <p>With regard to the comments on RPAS and, in particular, not changing part (b) of the existing definition, AEMO points to page 19 of the AEMC Rule Determination where the AEMC</p>

Organisation	Submission	Response
		states that “the definition and objective of NSCAS are expressed in terms of market benefits, rather than spot market trading benefits, in order to better align with the investment test used by TNSPs to assess network investments.” Refer to section 4.1
TransGrid	Option 1 as it is currently envisaged may not be adequate. It has limited scope and does not include: <ul style="list-style-type: none"> Services such as reactive power required to maintain voltage during normal operation: and Any service to increase transient stability 	Agree. Option 1 as currently envisaged may not be adequate. Refer to section 4.1
TransGrid	Option 2 needs to also include an item: “Services that provide a power transfer capability to meet the Jurisdictional planning criteria.	Noted. The AEMC indicated on page 19 of the Rule determination that “the definition of NSCAS should be limited to the ancillary services that are defined on a nationally consistent basis... the definition of NSCAS should exclude any other non-market ancillary services that may be acquired by TNSPs to address other technical requirements and regulatory instruments.” As a result of the AEMC’s comments, AEMO does not consider that this would meet the intended effect of the new rules. Refer to section 4.1

Issue 3.1 Is the quantity procedure in section 3.1.3 sufficient for determining the quantity of NSCAS for the purposes of the NSCAS Quantity Procedure?

Organisation	Submission	Response
Snowy Hydro	In summary we see no obvious issues with the current quantity procedure but note that this will require on-going assessment to ensure that the quantities being assessed meet the requirements of NEM moving forward	Noted
TransGrid	How does AEMO define what is an “issue” in the first dot point of section 3.1.3?	AEMO is using the word ‘issue’ to reflect all matters or questions or concerns
TransGrid	What is meant by the “necessary data” in the second dot point of section 3.1.3.	AEMO believes that data for analysis is provided by the tenders during the tendering process
TransGrid	It would be beneficial to list the requirements for each service and consider the details before formulating a generic list.	Noted. AEMO will take into account the requirements for each service type when developing the quantity procedure.

Organisation	Submission	Response

Issue 3.2 Is the process outlined in identifying market benefits appropriate?

Organisation	Submission	Response
Snowy Hydro	Snowy Hydro believes that “enhancing trade from the spot market” is the most significant component of the market benefits that are derived by the procurement and dispatch of NSCAS	This is very type dependant. Some types of NSCAS will reduce unserved energy (or defer generation investments), others will mainly enhance trade.
Snowy Hydro	AEMO states in the Issues Paper that it does not consider benefits from competition benefits. We believe this omission would be inefficient and not in the long term interests of consumers.	The approach outlined is intended to screen NEM-wide for where there might be a benefit. Competition benefits should, if considered relevant, be included in subsequent studies (such as RIT-T assessments) for candidate schemes identified by this process.
TransGrid	AEMO’s description of the approach to quantifying the market benefits is relatively vague. It appears to fall short of the RIT-T requirements for network augmentations.	Agreed about the lack of detail. AEMO will expand the description of this process in the NSCAS Quantity Procedure. The approach was not intended to duplicate the complexity of a RIT-T study. Rather, it will identify where further studies, such as a RIT-T should be undertaken.
TransGrid	For a transparent process AEMO should provide the full details of this process to enable it to be replicated by interested parties.	Agreed. AEMO will expand the description of this process in the NSCAS Quantity Procedure and provide additional information in the 2011 NTNDP
TransGrid	The market modelling would need to assume a certain generator bidding behaviour and the details of this would need to be provided.	The approach outlined is intended to screen NEM-wide for where there might be a benefit. As a result, a simple approach of using short-run marginal cost bidding behaviour was proposed, with <i>Generator</i> costs being sourced from the latest NTNDP modelling.
TransGrid	The impact of increased power transfers on system losses also need to be considered	AEMO believes that the impact of changes in losses would generally be small compared to other benefits. System losses, if considered significant, be included in subsequent studies (such as RIT-T assessments) for candidate schemes identified by this process.
TransGrid	The present annual cost of NSCAS is substantial and it is not clear to TransGrid that capital deferral could be ignored.	The approach outlined is intended to screen NEM-wide for where there might be benefits from procuring NSCAS. <i>Generation</i> deferral benefits should, when relevant, be included in subsequent studies

Organisation	Submission	Response
		(such as RIT-T assessments) for candidate schemes identified by this screening process.
TransGrid	AEMO indicates that it would ignore competition benefits, but does this actually relate to the bidding strategy used in the simulations?	The approach outlined in the Issues Paper is intended to screen NEM-wide for where there might be benefits from procuring NSCAS. Further benefits such as competition benefits when relevant should be included in subsequent studies (such as RIT-T assessments) for candidate schemes identified by this screening process.
TransGrid	AEMO would need to benchmark its market modelling outcomes.	Agreed. The modelling undertaken in 2011 has been tested for historical years. This will be referenced in the 2011 NTNDP.
TransGrid	TransGrid sees a need for greater detail and explanation of the intended approach to quantifying the market benefits	Agreed. AEMO will expand the description of the approach to quantifying market benefits in the NSCAS Quantity Procedure and also provide additional information in the 2011 NTNDP.
Transend	The approach to analysing market benefits should be transparent and provide sufficient detail to enable interested parties to apply the same analysis.	Agreed. AEMO will expand the description of the process for analysing the market benefits in the NSCAS Quantity Procedure and also provide additional information in the 2011 NTNDP.
Transend	Transend does not support AEMO's view that additional benefits of capital deferral, reductions in ancillary service costs, competition benefits and option value are generally not material and should therefore not be considered from an NSCAS perspective.	The approach outlined in the Issues Paper is intended to screen NEM-wide for where there might be benefits from procuring NSCAS. Further benefits as are suggested here should when relevant be included in subsequent studies (such as RIT-T assessments) for candidate schemes identified by this screening process.
Transend	Transend is concerned with what planned generator outage assumptions are to be applied for Monte Carlo simulation in determining market benefit of NSCAS in Tasmania. In Transend's case the timing of planned generator outages has a significant impact on the amount of NSCAS required.	Agreed. AEMO will contact Transend to discuss how planned <i>generator outages</i> are best included in the modelling.

Issue 4.1 Are there any other issues that need to be taken into account in developing the NSCAS Description and the NSCAS Quantity Procedure?

Organisation	Submission	Response
TransGrid Transend	Both TNSPs and AEMO should agree on the NSCAS Description and NSCAS Quantity Procedure	Noted. The consultation process gives participants the opportunity to comment on the detail in these documents.

Organisation	Submission	Response
TransGrid	<p>TransGrid does not agree with the following Issues Paper statement (page 5):</p> <p>“NSCAS can significantly increase the secure power transfer capability of a transmission network and can usually be acquired by a TNSP or AEMO within a shorter timeframe compared to what is required for installing new transmission assets.</p>	<p>“Power transfer capability of a transmission network” was meant to refer to “active or reactive power transfer of a transmission network”.</p> <p>AEMO agrees with TransGrid that NSCAS can be provided by some transmission assets and therefore may not be acquired in a shorter timeframe than required for installing new transmission assets.</p>
TransGrid	<p>The four dot points contained in the first paragraph on page 10 of the Issues Paper would be improved if it included consideration of the release of power flow models used to determine the quantities.</p>	<p>Noted. AEMO has updated the NSCAS Quantity Procedure to include this consideration</p>
TransGrid	<p>Will AEMO be able to provide technical requirements for the next 5 years, so that TNSPs can readily put in place a process to procure the required quantity of NSCAS.</p>	<p>The 2011 NTNDP process will provide information on the NSCAS required, including what type of NSCAS and the location.</p>
Transend	<p>Transend considers that the NSCAS description and quantity procedure should be broad based with a clear articulation of the service.</p>	<p>Noted.</p>

APPENDIX 2 – SECOND STAGE CONSULTATION SUBMISSIONS

This table contains AEMO’s response to second stage submissions in response to the NSCAS Description & Quantity Procedure Draft Determination and Report.

NSCAS Description

Organisation	Submission	Response
Hydro Tasmania	Hydro Tasmania supports the approach (Option 2) used to describe the services in the three generic types.	Noted
IPR – GDF Suez	Section 5.1(b) The text describes the outcome that is sought in dispatching the NSCAS, but does not describe the service itself.	<p>Section 5.1(b), relates to the procurement of NSCAS to maximise the economic benefit of increasing the transfer of <i>active power</i> or <i>reactive power</i> into or out of a <i>transmission network</i>. The description is by necessity generic, because there may be several ways of delivering the service. Also the service requirement may be different depending on the <i>constraint</i> that is being addressed. Thus it is not possible to provide a prescriptive description of the services.</p> <p>AEMO has now revised the NSCAS Description to provide a better indication of the service required.</p>
IPR – GDF Suez	Section 5.2 The first sentence in the second paragraph contains the phrase “under a contingency”. This is unclear – does it mean following a contingency?	Agreed. Change the text as proposed.
IPR – GDF Suez	Section 6.1(b) The text describes the outcome that is sought in dispatching the NSCAS, but does not describe the service itself.	<p>Section 6.1(b) relates to the procurement of NSCAS to maximise the economic benefit of increasing the transfer of <i>active power</i> or <i>reactive power</i> into or out of a <i>transmission network</i>. The description is by necessity generic, because there may be several ways of delivering the service. Also the service requirement may be different depending on the <i>constraint</i> that is being addressed. Thus it is not possible to provide a prescriptive description of the services.</p> <p>AEMO has now revised the NSCAS Description to provide a better indication of the service required.</p>
IPR – GDF Suez	Section 7.1(b) The text describes the outcome that is sought in dispatching	Section 7.1(b) relates to the procurement of NSCAS to maximise the economic benefit of increasing the transfer of <i>active power</i> or

	the NSCAS, but does not describe the service itself.	<p><i>reactive power</i> into or out of a <i>transmission network</i>. The description is by necessity generic, because there may be several ways of delivering the service. Also the service requirement may be different depending on the <i>constraint</i> that is being addressed. Thus it is not possible to provide a prescriptive description of the services.</p> <p>AEMO has now revised the NSCAS Description to provide a better indication of the service required.</p>
Hydro Tasmania	Include inertia together with fault level in the examples listed for NLAS	The NSCAS Description has been revised to include fault level and inertia as examples of NLAS associated with HVDC <i>transmission systems</i> .
TransGrid, Transend	Replace the Transient Stability Ancillary Service, (TSAS) with a Network Stability Ancillary Service (NSAS) to allow small signal stability problems to be also addressed.	Refer to Section 2.1 for response.
TransGrid Transend	The examples provided in the three classes of ancillary service should indicate that they are not an exhaustive list.	Agreed. AEMO has modified the NSCAS description as suggested.
TransGrid Transend	The Description of NSCAS requires further clarity as to how a TNSP can provide non market ancillary services in the form of or using its own assets, excluding the regulatory assets and network support contracts that already exist.	<p>Although the NSCAS planning process expects a TNSP to bear the primary responsibility for meeting a <i>NSCAS gap</i> identified in the NTNDP, using its prescribed assets or entering into <i>network support agreements</i>, the process also allows a TNSP to provide NSCAS in response to an invitation to tender called by AEMO.</p> <p>TNSPs assets in the regulated asset base can provide an ancillary service (e.g. capacitor banks provide a voltage control ancillary service), but are not procured as a NSCAS. Under some circumstances it is possible for a TNSP to offer NSCAS services from assets outside the regulated asset base.</p> <p>AEMO will amend the NSCAS Description to clarify this point.</p>
TransGrid Transend	The Description of NSCAS requires further clarity as to how a TNSP can provide facilities beyond the requirement of schedule 5.1 of the NER that would also support and help control the network in an economic manner.	It is expected that all <i>NSCAS gaps</i> related to security and reliability of supply will be covered by TNSPs through their planning processes (and hence meet the technical requirements of schedule 5.1). The RIT-T (or other justification) allows for a <i>network augmentation</i> to be developed that

		<p>exceeds the requirements of schedule 5.1 where there is a net economic benefit.</p> <p>AEMO does not propose to alter the NSCAS Description as a result of this issue.</p>
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NSCAS Quantity Procedure

Organisation	Submission	Response
Hydro Tasmania	Hydro Tasmania supports the document as is.	Noted
IPR – GDF Suez	Section 4 The first sentence includes a brief description of NLAS which differs from that contained in the description document.	Agreed. AEMO has changed the NSCAS Quantity Procedure to align the description of NLAS with the NSCAS description.
IPR – GDF Suez	Section 4 (1) Rather than review the top 10 binding constraints, should review the top 10 binding thermal constraints.	AEMO will generally address a minimum of 10 total constraints (not 10 constraints for each type of NSCAS). A greater number will be considered if AEMO finds that NSCAS could provide significant economic benefit for resolving them.
IPR – GDF Suez	Section 5 (1) Rather than review the top 10 binding constraints, should review the top 10 binding voltage related constraints.	AEMO will generally address a minimum of 10 total constraints (not 10 constraints for each type of NSCAS). A greater number will be considered if AEMO finds that NSCAS could provide significant economic benefit for resolving them.
IPR – GDF Suez	Section 5 (4) Reference to schedule 2 (should be schedule 1?)	Agreed.
IPR – GDF Suez	Section 6 (1) Rather than review the top 10 binding constraints, should review the top 10 binding transient stability related constraints.	AEMO will generally address a minimum of 10 total constraints (not 10 constraints for each type of NSCAS). A greater number will be considered if AEMO finds that NSCAS could provide significant economic benefit for resolving them.
IPR – GDF Suez	Section 6 (4) Reference to schedule 2 (should be schedule 1?)	Agreed.
TransGrid Transend	It is important to rationalize generation scenarios and bidding strategies before a meaningful NSCAS assessment can be made.	<p>AEMO will develop generation and bidding scenarios as part of the NTNDP process, but will adapt these if considered appropriate.</p> <p>In the absence of better information, AEMO proposes to use either SRMC bidding or historical bidding. In cases where bidding is expected to change and this could have a</p>

		significant impact on the economics, a dynamic bidding methodology could be used.
TransGrid Transend	Transend may not be able to provide a connection point forecast for direct supplied customer points... because of confidentiality and uncertainty.	This information is required by AEMO to undertake its functions under the NER. AEMO will be formally approaching Transend to get access to all connection point forecasts, including direct supplied customers. This information is an important input into the modelling work for the NTNDP.
TransGrid Transend	The proposal for AEMO to use a different economic benefits test (to the RIT-T required by TNSPs) gives rise to the risk of spurious NSCAS gaps being identified through different economic modelling methods. It is recommended that AEMO undertake the same economic benefits test as TNSPs	Refer to section 3.1 for the response.
TransGrid Transend	AEMO makes the statement that additional benefits will be captured through the RIT-T process. This assumes the NSCAS service / or investment will be above \$5 million. Projects under \$5 million do not go through the RIT-T process.	AEMO will amend the NSCAS Quantity Procedure section 7 to refer to RIT-T or other justification.
TransGrid Transend	The 30 day inquiry period from the time of the AEMO request to the TNSP response is insufficient time for the TNSP to perform the mandated economic benefits tests. AEMO should perform the same economic test as the TNSP for identified NSCAS gaps prior to their publication in the NTNDP	NSCAS gaps will be identified during the NTNDP process and AEMO will advise the relevant TNSP as results are being developed, prior to the TNSP becoming formally aware when the NTNDP is published. Normally, an AEMO request for a TNSP response only occurs after approximately a 6 month period giving a TNSP adequate time to perform an economic test and publish its plans in the subsequent year APR.
TransGrid	Amend page 7 (2) on information gathering to avoid a duplicative process.	Agreed.
TransGrid	Amend page 10 (2) on critical clearance times to remove critical and just require clearance times.	Agreed.
TRUenergy	TRUenergy agrees with Transend's view that benefits of capital deferral, reductions in ancillary services costs, competition benefits and option value can be material. We suggest that	Agreed.

	<p>AEMO remain open to the option of considering these other benefits in the market benefit test where it is logical and pragmatic to do so.</p> <p>We propose that AEMO amend the Quantity Procedure page 12 to allow AEMO the discretion to include consideration of other market benefits.</p>	
TRUenergy	<p>AEMO's view that these benefits be left to a more detailed RIT-T process precludes the situation where NSCAS is needed until other investments in either transmission or generation is commissioned, thus reducing the need for NSCAS.</p>	<p>AEMO believes that the RIT-T process is intended to produce the preferred outcome that maximises the economic benefits. Short term NSCAS could be part of the preferred outcome.</p> <p>Section 7 of the NSCAS Quantity Procedure states that the economic benefits assessed in the NTNDP process will be determined over a 5 year period or longer.</p>

Other matters

Organisation	Submission	Response
IPR-GDF Suez	<p>Can AEMO indicate when it intends to conduct the consultation process on the procedures and guidelines for the dispatch of non-market ancillary services, and develop the procedures and guidelines</p>	<p>These details will be available on AEMO's website under the 'Consultations' menu.</p>
TRUenergy	<p>TRUenergy supports the decisions made by AEMO in the draft determination</p>	<p>Noted.</p>

GLOSSARY

- (a) In this document, a word or phrase *in this style* has the same meaning as given to that term in the NER.
- (b) In this document, capitalised words or phrases or acronyms have the meaning set out opposite those words, phrases, or acronyms in the table below.
- (c) Unless the context otherwise requires, this document will be interpreted in accordance with Schedule 2 of the *National Electricity Law*.

TERM	MEANING
AVR	Automatic voltage regulator
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
NCAS	<i>Network control ancillary service</i>
NCAS Description	The document available at: http://www.aemo.com.au/electricityops/ncas.html
NCAS Quantity Procedure	The document available at: http://www.aemo.com.au/electricityops/ncas.html
NEM	<i>National electricity market</i>
NER	National Electricity Rules
NLCAS	<i>Network loading control ancillary service</i>
NMAS	<i>Non-market ancillary service</i>
NSCAS	<i>Network support and control ancillary services</i>
NTNDP	National Transmission Network Development Plan, as that term is defined in the <i>National Electricity Law</i>
RIT-T	<i>Regulatory investment test for transmission</i>
RPAS	Reactive power ancillary service
SCO	Synchronous condenser operation
TNSP	<i>Transmission Network Service Provider</i>
TOSAS	<i>Transient and oscillatory stability ancillary service</i>
VCAS	<i>Voltage control ancillary service</i>