GUIDELINES FOR PREPARING LOCAL BLACK SYSTEM PROCEDURES

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1. BACKGROUNDBACKGROUND

These are the guidelines for preparation of local black system procedures (**Guidelines**), which AEMO publishes in accordance with clause 4.8.12(e) of the National Electricity Rules (**NER**).

Definitions and interpretation

1.1. Definitions and interpretation

1.1.1. Glossary

Terms defined in the National Electricity Law and the NER have the same meanings in these Guidelines unless otherwise specified in this clause.

Terms defined in the NER are intended to be identified in these Guidelines by italicising them, but failure to italicise a defined term does not affect its meaning. [*Note: italicisation of NER-defined terms will be completed*]

Other terms and abbreviations used in these Guidelines have the meanings given in the following table:

[*table of abbreviations and other terms will be inserted here*]

[*standard interpretation clauses will be inserted here*]

2. SUMMARY OF NER REQUIREMENTS

[Note: Bullet point summary provided for consultation version to provide the necessary rules context. Drafting will be reviewed and numbering updated]

2.1. AEMO obligations

- NER 4.8.12(a) requires AEMO to prepare a system restart plan for managing and coordinating system restoration during any major supply disruption. AEMO prepares a system restart plan for each *region*.
- AEMO must develop and publish guidelines for the preparation of local black system procedures (**LBSPs**) as required by NER 4.8.12(e).

2.2. Generator and NSP obligations

- NER 4.8.12(d) requires each Generator and NSP to develop LBSPs in accordance with the guidelines published by AEMO. These LBSPs must be consistent with any ancillary service agreements to provide system restart ancillary services (**SRAS**), to which the Generator or network service provider (**NSP**) is a party.
- According to NER 4.8.12(f), the LBSPs must provide sufficient information to enable AEMO to understand the likely condition and the capabilities of plant following any major supply disruption such that AEMO is able to effectively coordinate the safe implementation of the system restart plan. The LBSPs must incorporate relevant energy support arrangements to which a Generator or NSP may be a party.

2.3. AEMO, Generator and NSP rights and obligations

- Each Generator and NSP must submit LBSPs to AEMO for approval, as required by NER 4.8.12(g). AEMO must take into account the guidelines for preparation of LBSP published under NER 4.8.12 (e) and the relevant components of the system restart plan in approving LBSPs.

- AEMO may request a Generator or NSP to amend its LBSP (in writing giving reasons) under NER 4.8.12(h). Requested amendments may include conditions in respect of any energy support arrangement, as AEMO reasonably considers necessary to ensure the integrity of the system restart plan. A Generator or NSP must comply with AEMO's reasonable requests for amendment, as required by NER 4.8.12(i).

2.4. Other Registered Participants

- The NER only require Generators and NSPs to prepare and submit LBSPs. However, in the event of a black system, it will be important for AEMO to understand the capabilities of major stabilising loads that may need to be energised at different stages in the power system restoration process.
- These Guidelines include provision for the owners or operators of major load facilities to prepare and submit LBSPs. Although this is not compulsory, it is highly desirable for AEMO to have this information when developing the system restart plan.

3. LOCAL BLACK SYSTEM PROCEDURESLOCAL BLACK SYSTEM PROCEDURES

The LBSPs of Generators and NSPs are the main source of information for AEMO to understand the likely condition and the capabilities of generation and network plant, following supply disruptions resulting in an absence of voltage on part of the power system, causing disconnection of power station/s or the loss of supply to loads.

Provision of accurate information in LBSPs is important for AEMO to be fully informed of the technical requirements and limitations of power stations and network plant in these conditions, to develop robust system restart plans.

AEMO also needs to know about any obligations that a Generator or NSP may have under any *energy support arrangements* they may be a party to, for example to directly support the re-energisation of specified *load*. These arrangements should be incorporated into the LBSP where applicable. AEMO will endeavour to take account of them in developing the *system restart plan*, but may need to request changes if *power system* restoration cannot otherwise be performed efficiently in accordance with the principles of the *system restart plan*.

In providing required information in the LBSPs, Generators and NSPs may make the basic assumption that power stations and network plant are not damaged due to the events that resulted in the major supply disruption. Generators and NSPs are encouraged to include additional scenarios that could occur in relation to generation and network plant following a major supply disruption, to demonstrate the status and the capabilities of plant. For instance where the plant configuration could reasonably deviate from normal operation prior to a major supply disruption, such as different control modes.

AEMO understands that some of the information to be included in the LBSPs (such as expected timeframes) will need to be the Generator's or NSP's best estimate. The following guidelines apply to estimated information:

- Estimates should be the reasonable best estimates of the likely actual capabilities of the relevant plant in black system conditions, considering the known limitations of the plant.
- These will not necessarily be minimum or maximum capabilities or timeframes, and no allowances should be included for unknown limitations.
- If a Generator or NSP considers it appropriate to allow for a possible contingency, the issue should be specifically identified and the LBSP should describe what impact it may have on the relevant plant capability.

- The LBSP may include a reasonable disclaimer by the Generator or NSP on estimated information included in LBSPs, provided that all reasonable care is exercised in preparing those estimates.

AEMO will treat completed LBSPs as *confidential information*, subject to the protected information regime in the National Electricity Law, sections 54 to 54H. AEMO will provide LBSPs for generators and NSPs in a *region* to the respective regional TNSP to assist in the development of the system restart plan.

3.1. Local black system procedures for Generators

Generator LBSPs must contain sufficient information for AEMO to understand the capability of the *generating system* to restart and return to stable operation and restore minimum and maximum generation capacity following a *major supply disruption* in the part of the network to which it is connected.

The Generator LBSPs must summarise internal procedures of the power stations, and include as an attachment the detailed switching sequences used by the Generator's staff during restart of generating units.

The information required in Generator LBSPs is summarised in this section. A list of information to be provided is covered in the Generator LBSP template on AEMO's website[1].

Generators are required to complete and submit an LBSP for each *generating system* that they own, operate or control. Generators must submit LBSPs to AEMO electronically by emailing to the following email address: **system_restart_advice@AEMO.com.au**.

The broad areas of information to be provided in a LBSP for a *generating system* are:

- General information on the plant
- Identification of the responsibilities and relationship with other parties
- Assessment of the emergency situation and safe shut down of generating units
- Restart of generating units and high-level strategies applied by Generators in the event of a major supply disruption
- Technical and operational information that AEMO needs to consider in developing system restart plans
- Energy support arrangements the Generator is a party to.
- Contingency plans if the generator fails during system restoration

In addition to the above, specific information is to be provided depending on plant types or connection arrangements, including:

- Specific information to be provided for *embedded generating units*.
- Specific information to be provided for *asynchronous generating units*, including wind and solar generation, and energy storage systems.
- Specific information to be provided by generation with trip to house load (**TTHL**) capability.

If some of the required information is not readily available, the Generator should state when that information is likely to be available, and update the LBSP as soon as it becomes available.

As required by the NER, if a Generator is contracted as an *SRAS Provider*, the relevant LBSP must be consistent with the Generator's SRAS agreement with AEMO.

[1] Available at : https://www.aemo.com.au/Stakeholder-Consultation/Consultations/Proposed-Amendments-To-The-Guidelines-For-Preparing-Local-Black-System-Procedures

AEMO may request information in addition to that specified in the template, if reasonably required to understand the plant capabilities and limitations.

3.2. Local black system procedures for NSPs

The NSP LBSPs will contain sufficient information for AEMO to understand the capability of NSP to restore the network following disruption of supplies to a major part of its network.

The NSP LBSPs must summarise internal switching procedures followed by NSP operations staff following supply disruptions and include, as an attachment, the detailed switching sequences.

The NSP LBSPs will contain the relevant information in the following areas.

- Capability of control centre business continuity (and back up control centres) following the loss of primary supplies, capabilities of emergency supplies, high level strategies to conserve emergency supplies.
- Availability of communication systems (normal and emergency), groups who have access/use these systems and the capability of continued use following a significant supply disruption.
- Length of time the NSP supervisory systems (SCADA monitoring and control) are likely to remain operational following the loss of primary supplies and high-level strategies to conserve emergency supplies.
- Activation of LBSP within the NSP system. Safe shutdown and preparation of the transmission/distribution network to accept supply. The high-level strategy of preparing individual substations to accept supply and critical locations where staff are required.
- Synchronising points available within the transmission network and at connection points to the distribution network, and their settings.
- Technical limitations/requirements of respective network including any dynamic reactive support plant and synchronous condensers that AEMO should be aware of when restarting the transmission/distribution network.
- Specific requirements of major time critical loads connected to the NSP network, details of any relevant energy support arrangements to which the NSP is a party.
- Operating arrangements between TNSPs and DNSPs to liaise restoration of the power system following a significant supply disruption.
- Ability of the TNSP/DNSP to deliver discrete loads as required by AEMO.

The networks owned by NSPs include transmission networks, distribution networks and DC Links.

The detailed items of information to be provided in LBSPs of DC Links and NSPs are included in the LBSP templates for DC links and NSP on AEMO's webiste[2].

All NSPs must submit LBSPs to AEMO electronically, to the following email address: **system_restart_advice@AEMO.com.au**.

3.3. Local black system procedures for major loads

AEMO may request the owner or operator of a major industrial load to provide a LBSP. While this is not a requirement under the NER, this will assist AEMO in development of the system restart plan. It will also allow AEMO to consider timeframes for restoration of major industrial loads during system restart.

If requested, please submit LBSPs to AEMO electronically, to the following email address: **system_restart_advice@AEMO.com.au**.

[2] Available at : https://www.aemo.com.au/Stakeholder-Consultation/Consultations/Proposed-Amendments-To-The-Guidelines-For-Preparing-Local-Black-System-Procedures

4. REVIEW AND UPDATE OF LOCAL BLACK SYSTEM PROCEDURES

Generators and NSPs are responsible for ensuring that the information in its LBSP reflects the current performance and capabilities of its plant at all times. As such, AEMO expects Generators and NSPs to review an LBSP:

- Whenever there is a change to the primary plant or secondary plant or their operation, that would impact the information contained in the existing LBSP.
- Routinely at regular intervals (once every two years is suggested as a guide) even where no material changes have taken place in that period, as performance can change over time.

Where corrections or additions are identified following an LBSP review, the Generator or NSP must immediately notify AEMO of the items requiring amendment, and submit an updated version of the LBSP to AEMO as soon as reasonably practical. The same email address is to be used for notifications and updated LBSPs: **system_restart_advice@AEMO.com.au**.

5. LOCAL BLACK SYSTEM PROCEDURES APPROVAL PROCESS

AEMO will assess the adequacy of the information provided in new or updated LBSPs and the consistency of LBSPs with the system restart plan and any SRAS agreements, before approval. [NER 4.8.12 (g)].

AEMO is required to develop its system restart plans consistent with the system restart standard. These plans incorporate SRAS procured to enable restoration of *regional* supply capacity within certain timeframes defined in the system restart standard. AEMO will assess whether the capability and strategies detailed in LBSPs are sufficient for the power system to be restarted to support the *system restart plan*. If the strategies detailed in Generator and/or NSP LBSPs are not adequate, AEMO will use NER 4.8.12(h) to request changes to the strategies presented by Generators and/or NSPs in their LBSPs as required.

AEMO will consider the impact of Generator/NSP obligations associated with the energy support agreements the Generators/NSPs may be party to, in developing system restart plans. If the Generator/NSP obligations are likely to cause delays in restoring the power system, AEMO will impose suitable conditions in respect of the energy supply agreement/s and request amendments to the relevant LBSPs.