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Status of the Review of the System Restart Standard

Public Forum – Introduction

Suzanne Falvi
Acting Senior Director – Market Development - AEMC

27th April 2016

Agenda – Session 1

1. Neville Henderson - Chair Reliability Panel, Commissioner AEMC Status of the Review of the System Restart Standard

2. Jeff Palermo - International Expert, DGA Consulting International experience on major outages and black start policy

3. Mark Stedwell - Group Manager System Capability, AEMO AEMO's approach to SRAS procurement and black start restoration

4. Q&A

11:00 Morning tea

Agenda – Session 2

1. Russ Skelton - Director, Russ Skelton & Associates
   SRAS from the perspective of Generators and Major Energy Users

2. Gerard Reiter – Exec. General Manager Asset Management, TransGrid
   SRAS from the perspective of Transmission Networks

3. Q&A

12:30 Lunch

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Status of the Review of the System Restart Standard

Public Forum – Update on the Review

Neville Henderson
Chair of the Reliability Panel and AEMC Commissioner

27th April 2016

Status overview

1. Context on the System Restart Standard
    a) Why is the Reliability Panel reviewing the Standard?
    b) The restoration from a black system
    c) The requirements of the Standard
    d) The issues being considering in the review

2. Next steps

Why is the Panel reviewing the Standard?

The Reliability Panel's task

- The Standard was last reviewed in 2012, where minor alterations were made
- In 2015, the AEMC amended the rules relating to SRAS procurement and the setting of the Standard, this allowed for the standard to vary between electrical sub-networks if appropriate.
- The current review of the Standard is due for completion by the end of 2016
- The Standard does **not** cover restoration in the event of localised or controlled loss of supply to consumers. Separate arrangements apply in these circumstances.

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System Restoration

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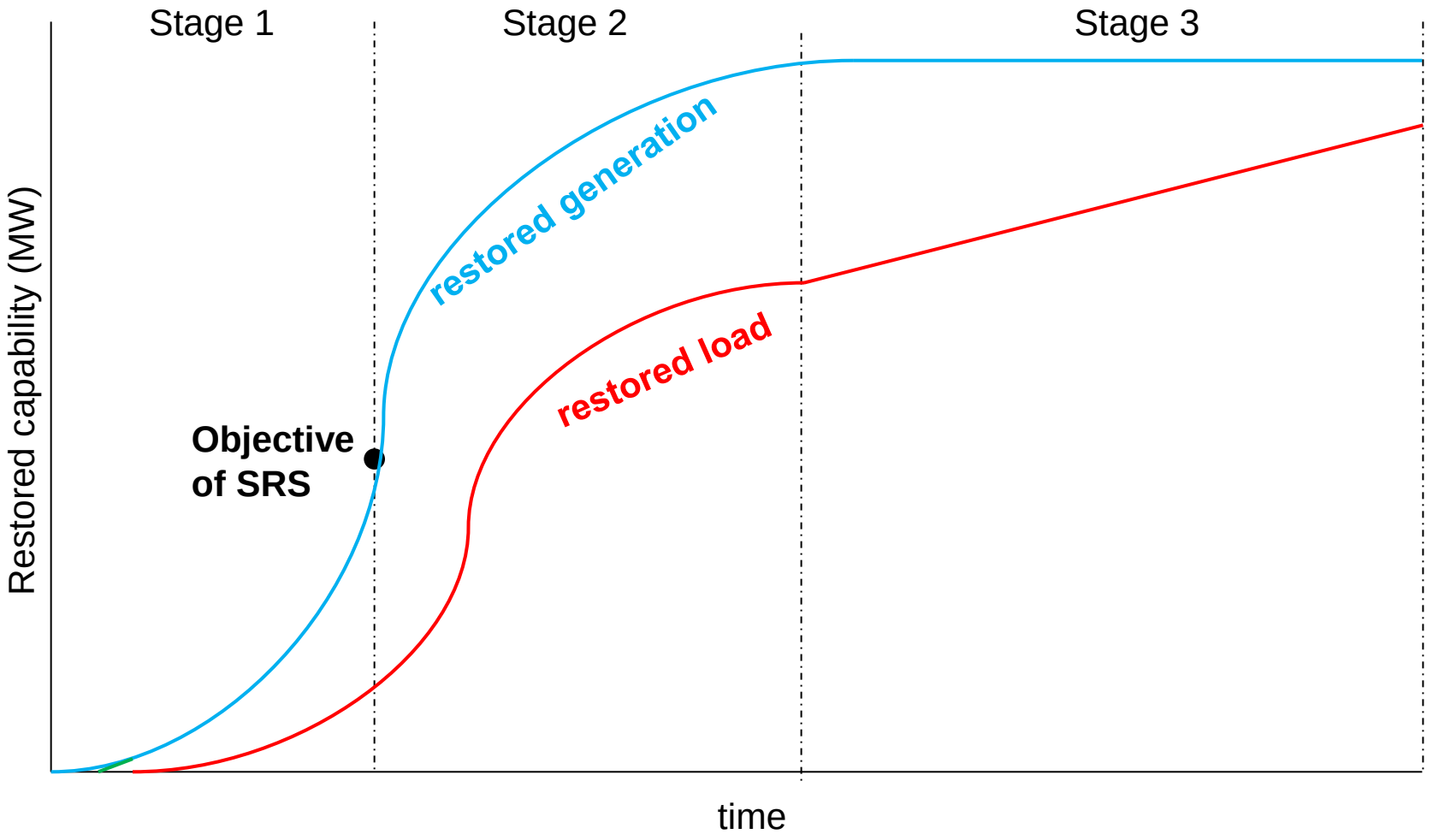
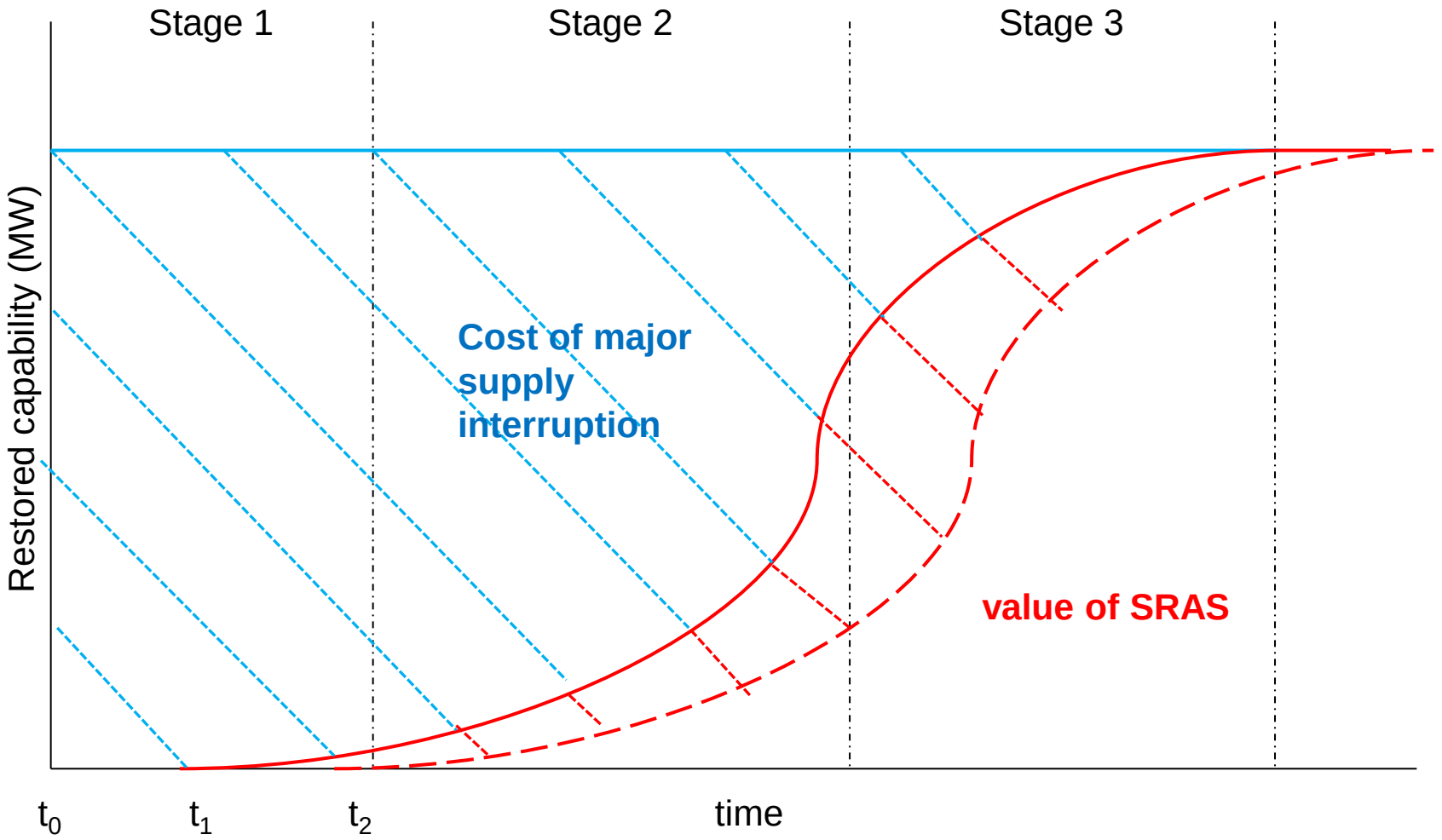
The restoration process can considered in three main stages

Stage 1 Focus - restart system	Stage 2 Focus - restore supply	Stage 3 Focus - restore load
• Initial assessment of system conditions • SRAS sources restart selected generating units • Energise main transmission network and commence restart of remaining generation • Some load energised to stabilise the system	• Complete restart of required generating units • Complete energisation of the majority of the transmission network • Energise more of the distribution network and larger blocks of load	• Remaining transmission and distribution network energised as loads are progressively restored • Commence repairs of damaged equipment

Indicative restoration process



Value of SRAS depends on speed load restored



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System Restart Standard

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System Restart Standard (Standard)

- The Standard is determined by the Reliability Panel in accordance with the National Electricity Rules (NER) and the SRAS objective.
- The Standard includes specifications on:
  - The speed and level of restoration as a procurement target
  - The aggregate level of reliability of the SRAS services
  - Requirements for AEMO to consider diversity when procuring from multiple SRAS sources
  - Guidelines for AEMO on the determination of electrical sub-networks

Restoration of Load and the Standard

- The standard defines a procurement target for restoration of *supply*
  - *supply* is defined as the “delivery of electricity” in the NER
  - *supply* is taken to be the availability of generation connected to and synchronised with the transmission network, including the energisation of the necessary transmission components.
- The rate at which load is restored is outside the current scope of the Standard as defined in the NER.
- AEMO is responsible for managing the restoration of load in consultation with the Jurisdictional System Security Coordinators and the Network Service Providers.

Black Start (SRAS) Procurement

- The Standard is used by AEMO as an SRAS procurement target each electrical sub-network. AEMO procures SRAS from some black start generators:
  - in order to meet the Standard
  - at minimum cost
- The costs of procuring SRAS are recovered 50 per cent by generators and 50 per cent from consumers on a regional basis
- AEMO has so far never had to use the SRAS they have procured

The issues being considering in the review

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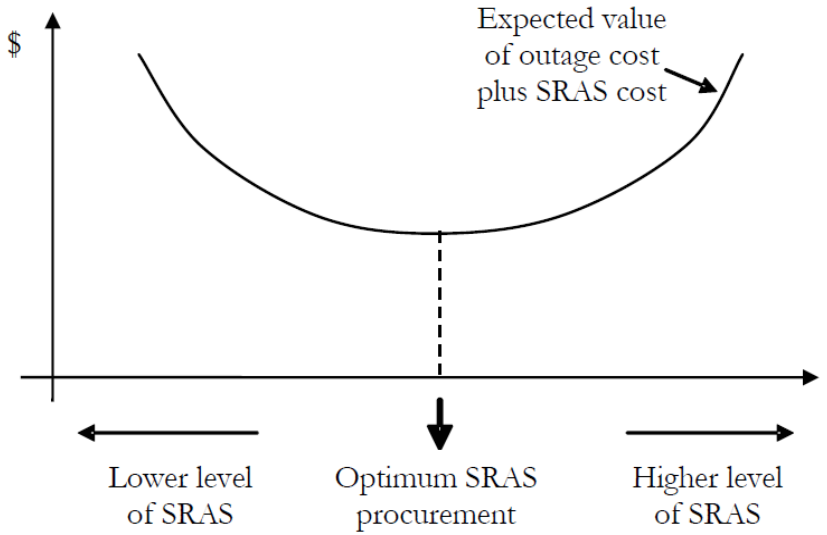
Assessing the Standard

- The National Electricity Rules require AEMO and the Panel to make their decisions following the SRAS Objective

"The objective for system restart ancillary services is to minimise the expected costs of a major supply disruption, to the extent appropriate having regard to the national electricity objective."

Balancing act

- The provision of SRAS is an ongoing cost borne by all generators and consumers
- However, procuring additional sources of SRAS may result in a faster restoration of the system, which would lower the costs to society of an extended outage
- The Panel aims to set the Standard so this combined cost is minimised



Issues the Panel needs to consider

- Impact on consumers of an extended large scale outage
- Technical ability of the system and load to be restored under different timeframes in different sub-networks
- Ongoing costs that are paid by consumers and generators for the provision of SRAS
- Economic characteristics of sub-networks, such as sensitive loads
- Providing an incentive for generators to maintain restart capability

Approach and next steps

- We are currently considering submissions and moving towards developing a draft Standard. To inform this we are:
  - consulting with individual stakeholders, Jurisdictions and AEMO
  - holding this public forum on the Review
  - have engaged a DGA Consulting to provide an international review of issues associated with restoring supply following a major black out
  - recently engaged Deloitte economic consultants to provide advice on the economic impacts of major supply interruptions

- We plan to have a draft Standard ready for consultation by July 2016, with the final Standard ready by September 2016

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