



2023-27 Transmission Revenue Reset

Revised Regulatory Proposal

Network Capability Incentive Parameter Action Plan (2023-27)

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PUBLIC



1 Proposed priority project – Realtime System & Restoration Manager

AusNet has identified the Realtime System & Restoration Manager (RTSRM) as a potential NCIPAP project.

1.1.1 Project description

The RTSRM is a General Electric (GE) Emergency Management System (EMS) application that will be available for normal operations such as daily switch orders and real-time monitoring and assessment of system conditions. This would increase the capability of network operators of creating and analysing small-scale outage and restoration plans typically needed for daily maintenance and clearance purposes, thereby providing wider market benefits. By improving the capability of realistic predictions of system conditions, this application would enable effective detection and response, as well as a reduction in restoration times. As a result, this is likely to allow more electricity to be transmitted through the network. Therefore, a reasonable interpretation of the purpose for implementing the RTSRM is to allow for the capacity of the network to transmit or distribute additional energy.

In addition, the RTSRM can assist users in emergency situations (such as system black restoration) by performing certain key mission critical functions. If grid conditions and/or the weather conditions keep changing, or if unforeseen situations arise (e.g., certain key devices become unavailable for usage in plans due to physical damages) – for which the grid operational plans need to keep adapting to real-time conditions, this application will provide the required data, enabling effective detection and response. This product has also been in service for several years at PG&E (Pacific Gas and Electric California) for de-energising and re-energising wide areas of California on extreme fire risk days.

We are proposing that we implement this product for not only normal operations but also for emergency situations to improve restoration time. In practice, the system would be continually evaluating and readjusting the restoration plan based on real-time data to accurately assist a controller complete restoration activities. One of the key objectives of the NCIPAP is to facilitate improvements of transmission system assets at times when users place greatest value on the reliability of the transmission system.¹ The RTSRM will assist in alleviating network constraints at times when it is most needed (i.e., such as during a system black event when network users place great value in transmission system reliability) and we have calculated the net present value (NPV) of implementing the project to be \$3.92M.

The RTSRM would be considered as an 'exploratory' NCIPAP project, where we could demonstrate that it will reveal important information in assisting in future transmission network capability development.² These types of projects are proposed on the basis that they result in an overall material benefit. It is evident from both the nature of the project, as well as the high-level feedback from PG&E, that implementing a cost-effective RTSRM would result in positive market benefits for transmission network users.

¹ AER, electricity transmission service target performance incentive scheme (STPIS) version 5 (corrected) - 1 October 2015, Clause 5.2(a)(2).

² Explanatory statement: Service Target Performance Incentive Scheme version 5, September 2015, pg. 37.

Table 1: AusNet's NCIPAP proposal for the 2023-27 regulatory period

Project name/ID	Realtime System & Restoration Manager (RTSRM)
Transmission circuit/injection point	Realtime predictions of Victoria wide transmission network and terminal stations at the AusNet Transmission Operations Centre.
Scope of works	Install RTSRM General Electric Energy Management System (EMS) application.
Current value of the limit	Existing EMS with default system restoration process and restoration time after a major disturbance event. It is assumed, (1) 6 hours to restore supply from Victoria system-wide blackout and, (2) 1 hour for supply restoration of localised loss of supply to each of the terminal stations in Victoria.
Improvement target in the limit	Advanced EMS which improves capability to reduce the restoration time. It is assumed 10% reduction in supply restoration time following Victoria system-wide blackout or loss of supply to a terminal station.
Material benefit	Proposed RTSRM is planned to make use of real-time data and the real state of the Victoria transmission network. This is to enable and define the best set of actions for network restoration and respond to the disturbance event quickly and reduce the supply restoration times by about 10%. Material benefit was assessed with reduction in unserved energy.
Completion date	During 2022-27 regulatory period
Capital cost	\$850,000
Operational cost	\$0
Market benefit	Expected annual benefit: \$0.60 million NPV of expected benefit: \$3.92 million
Project ranking	1

Table 2: AEMO Review

Review of material benefit	Proposed RTSRM is to allow identification of the best set of actions for network restoration following a partial or total Victoria-wide blackout. AusNet advised application of RTSRM would reduce the supply restoration times by about 10%. Material benefit was assessed by estimating reduction in unserved energy.
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	<p>AusNet determined the economic benefit with the probability of 1 in 200 years event of system wide blackout in Victoria and with probability of 1 in 20 years event for loss of supply to individual terminal stations. There is no historical data on probability of a system wide blackout in Victoria. However, if a higher probability were assumed the pay-back period would be reduced below 1.4 years.</p>
Benefit category	Likely benefit to consumers