

Attachment 11

Demand management incentives and allowances

2020-25
Regulatory Proposal
31 January 2019

This section outlines:

- › our proposed application of the AER's Demand Management Innovation Allowance Mechanism and the Demand Management Incentive Scheme.
- › These instruments operate via an annual compliance and approval process.



Company information

SA Power Networks is the registered Distribution Network Service Provider (**DNSP**) for South Australia. For information about SA Power Networks visit www.sapowernetworks.com.au

Contact

For enquiries about this Revenue Proposal please contact:

Richard Sibly
Head of Regulation
SA Power Networks
GPO Box 77
Adelaide SA 5001
sapn2020proposal@sapowernetworks.com.au

Disclaimer

This document forms part of SA Power Networks' Regulatory Proposal (**the Proposal**) to the Australian Energy Regulator (**AER**) for the 1 July 2020 to 30 June 2025 regulatory control period (2020-25 **RCP**). The Proposal and its attachments were prepared solely for the current regulatory process and are current as at the time of lodgment.

This document contains certain predictions, estimates and statements that reflect various assumptions concerning, amongst other things, economic growth and load growth forecasts. The Proposal includes documents and data that are part of SA Power Networks' normal business processes, and are therefore subject to ongoing change and development.

Whilst care was taken in the preparation of the information in this Regulatory Proposal, and it is provided in good faith, SA Power Networks, its officers and shareholders accept no responsibility or liability for any loss or damage that may be incurred by any person acting in reliance on this information or assumptions drawn from it for a different purpose or in a different context.

Copyright

This publication is copyright. SA Power Networks reserves to itself all rights in relation to the material contained within this publication. You must not reproduce any content of this publication by any process without first obtaining SA Power Networks' permission, except as permitted under the Copyright Act 1968 (Cth).

© All rights reserved.

Note

This attachment forms part of our Proposal for the 2020-25 RCP. It should be read in conjunction with the other parts of the Proposal.

Our Proposal comprises the overview and attachments listed below, and the supporting documents that are listed in Attachment 18:

Document	Description
	Regulatory Proposal overview
	Customer and stakeholder engagement report
	k
	k k
	k
	#
	\
	#
	-
	#
	o
)
Attachment 12	Classification of services
Attachment 13	Pass through events
Attachment 14	Alternative Control Services
Attachment 15	Negotiated services framework and criteria
Attachment 16	Connection policy
Attachment 17	Tariff Structure Statement
Attachment 18	List of Proposal documentation

Contents

11	Demand Management Allowance and Incentives	5
11.1	Rule requirements.....	5
11.2	Application of the DMIAM.....	5
11.3	Application of the DMIS.....	8
	Shortened Forms	10

11 Demand Management Allowance and Incentives

11.1 Rule requirements

The National Electricity Rules (NER) set out the relevant requirements in relation to the DMIAM and DMIS which are that

- A building block proposal must contain a description of how the Distribution Network Service Provider (**DNSP**) proposes that any DMIAM or DMIS specified in the Framework and Approach (F&A) paper should apply for the 2020–25 RCP¹
- the building blocks used to calculate the annual revenue requirement for each regulatory year of the 2020-25 RCP must include (amongst other things) revenue increments or decrements for the relevant regulatory year arising from the application of the DMIAM and DMIS²; and
- the building block determination must also specify how any applicable DMIS is to apply to the DNSP in the 2020-25 RCP³.

The AER's 2020-25 F&A stated it intends to apply a new DMIAM and DMIS published in December 2017 to SA Power Networks for the 2020-25 RCP⁴. Finally, we note that the DMIAM and DMIS instruments largely operate outside of the distribution determination process, via an annual compliance and approval process. Neither instrument requires upfront approval of funds or projects via the distribution determination.

11.2 Application of the DMIAM

Current Demand Management Innovation Allowance (DMIA)

The AER has to date applied a DMIA to DNSPs, to encourage research and development into innovative approaches to manage demand by means other than augmenting or replacing traditional network assets.

SA Power Networks has been a leader among DNSPs in using the DMIA on various innovative trials, and is one of only two DNSPs who in the current RCP have used the entire DMIA amount, as seen in Figure 11.1. Where possible, we have sought to maximise the value of the allowance through collaboration with other parties, joint funding arrangements and active dissemination of learnings from our innovation projects with other networks and industry participants.

During the 2015–20 RCP funding was used to undertake the following:

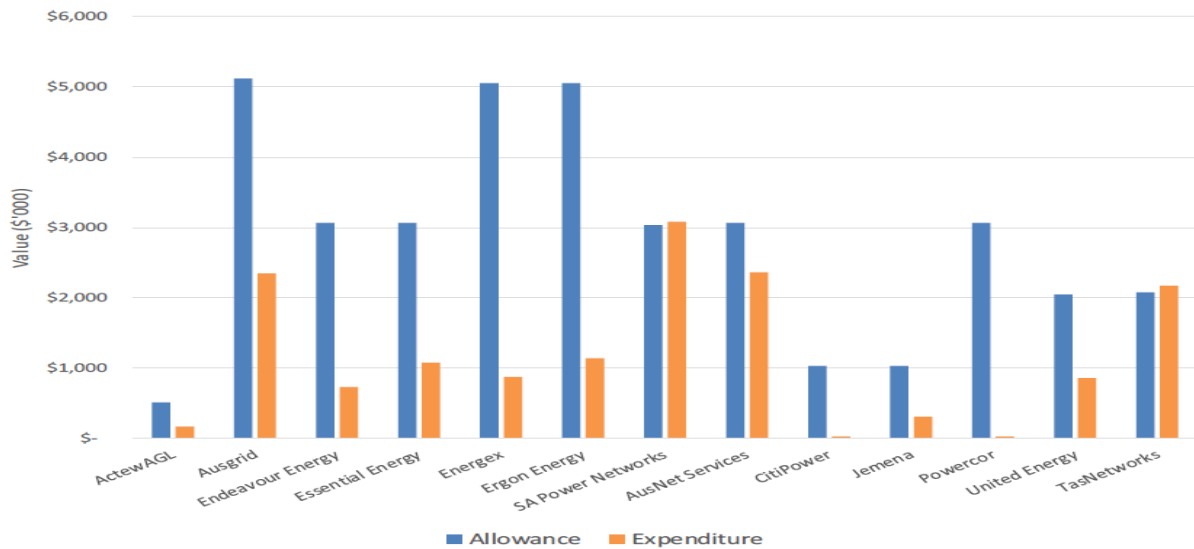
- Grid-side storage—a practical research study, partly funded by the Australian Renewable Energy Agency (ARENA), the SA Government and Energy Networks Australia (ENA), into the performance of grid-scale energy storage systems across the likely applications within the distribution network.
- Future network modelling—a comprehensive project designed to understand the likely network impacts of Distributed Energy Resources (DER) and how our network may best accommodate DER.
- Residential Energy Storage—a project deploying 100 residential energy storage systems within a selected trial area to study the performance of these systems, in particular when aggregated as a Virtual Power Plant (VPP) and to help defer network augmentation in the Adelaide suburb of Salisbury. This project is informing our future approach to managing the impact of emerging third-party VPPs on the network, as well as the opportunity for such VPPs to provide network support services such as peak demand reduction. This project won a national award for innovation from the ENA in 2017.

¹ NER S6.1.3(5)

² NER 6.4.3(a)(5).

³ NER, 6.3.2(a)(3).

⁴ AER, *Final Framework and Approach—SA Power Networks regulatory control period commencing 1 July 2020*, July 2018, p 76.

Figure 11.1: DMIA—comparison of 2015–20 RCP allowance vs expenditure to date (2014–15 to 2016–17)⁵

New DMIAM

In December 2017, the AER introduced the new DMIAM, which marginally increases the available funds, tightens the approval criteria and introduces greater reporting requirements as compared to the previous DMIA. We propose that the new DMIAM should apply for the 2020–25 RCP, consistent with the AER’s proposed position as set out in its Final Framework and Approach (F&A) SA Power Networks.⁶

We note that our submissions in relation to the F&A:

- Included a description (and relevant explanatory material) as to how SA Power Networks proposed that the DMIAM should apply to SA Power Networks during the 2020-25 RCP; and
- Detailed how SA Power Networks’ proposed approach would satisfy the requirements of the National Electricity Law and NER.

As these matters have been fully addressed and considered in the F&A consultation and development process and SA Power Networks is maintaining the same position, we have not repeated this information in this Attachment. Rather, to the extent required that information is incorporated by reference into this Proposal.

The DMIAM awards allowances via an annual application and approval process. Projects which we intend to fund using the DMIAM do not therefore need to be set out in this Regulatory Proposal. The only matter to be decided in the distribution determination is the total amount of the available allowance. Applying the calculation as set out in section 2.1(2) of the DMIAM, we propose that the maximum allowance for SA Power Networks for the 2020-25 RCP should be \$4.003 million, as set out in Table 1 below.

⁵ AER, *Decision—Approval of Demand Management Innovation Allowance (DMIA) expenditures by distributors in 2016–17 and 2017*, July 2018, p.8.

⁶ AER, *Final Framework and Approach—SA Power Networks regulatory control period commencing 1 July 2020*, July 2018, p.76.

Table 11-1: Calculation of total amount of the demand management incentive allowance for the 2020-25 RCP

(June 2020, \$ million)	2020/21	2021/22	2022/23	2023/24	2024/25	Total
Fixed allowance ⁷	0.213	0.213	0.213	0.213	0.213	1.063
Annual Revenue Requirement (AAR) - unsmoothed - prior to shared asset & DMIA adjustment	770.564	754.474	792.237	796.849	805.944	3920.069
Variable allowance (0.075% of ARR)	0.578	0.566	0.594	0.598	0.604	2.940
Total DMIAM cap	0.790	0.778	0.807	0.810	0.817	4.003

In general, we expect to make use of the DMIAM in the 2020–25 RCP for targeted innovation and research projects to further our understanding of how to manage the changing nature of demand on our network and the ongoing transition to decentralised generation. Over the course of the engagement program that has informed this Regulatory Proposal, customers and stakeholders have been supportive of our innovative approaches to demand management to date. They encouraged us to consider new demand management programs for the 2020-25 period that will complement other programs of work. We have identified two specific projects with potential to deliver high value in the near term:

1. Shifting hot water loads

Overnight storage hot water accounts for up to 800MW of load in South Australia and presents a very significant untapped demand-side resource. Shifting some or all of this load into the daytime has the potential to materially increase network and system wide hosting capacity for solar PV at low cost relative to other approaches. This could be achieved through a combination of approaches such as:

- re-programming the Off Peak Controlled Load (**OPCL**) switching times in customer meters to shift water heating to the middle of the day;
- for customers with smart meters able to be reconfigured ‘over the air’, changing OPCL switching times seasonally and / or by location to match load to solar PV production; and
- the use of emerging ‘smart’ hot water systems.

We intend to undertake field trials to explore these approaches and determine the most effective strategy for bringing hot water under active control in South Australia.

2. Substation voltage control

Recent work in Victoria has shown that voltage can be managed actively at the zone substation by automatically changing substation transformer tap positions, using end-of-line voltage measurements from customer meters to provide a feedback loop. This approach could potentially offer a cost effective means to increase network hosting capacity for solar PV in South Australia. However, unlike the Victorian DNSPs, we do not have access to the ubiquitous smart meter data on which the system depends.

We are considering field trials to explore whether the same outcome could be achieved in South Australia and other National Electricity Market (**NEM**) states that do not have DNSP-owned smart meters by using a combination of different data sources such as third-party smart meters, transformer monitors, customer inverters, etc, combined with data science to synthesise the data.

Other research areas of interest that may give rise to DMIAM projects in the 2020-25 RCP include:

- integration with future distribution market platforms;

⁷ To calculate the fixed allowance, the \$200,000 (\$2016–17) base allowance in the DMIAM is rolled forward to real dollars as at the end of the 2015–20 RCP (ie \$June 2020).

- the potential impact of electric vehicle (EV) charging, and opportunities for demand management using smart EV chargers; and
- the impact of embedded networks and community energy schemes.

As we further develop these projects, we will continue to seek to maximise the value of the DMIAM through partnerships with third-parties and leveraging external funding sources.

11.3 Application of the DMIS

In December 2017 the AER also introduced a new DMIS, which operates as an incentive cost uplift of up to 50 percent of our expected costs of efficient demand management projects, subject to certain constraints. We propose that the new DMIS should apply to the 2020–25 RCP, consistent with the AER’s proposed position as set out in its Final F&A for our business.

We note that our submissions in relation to the F&A:

- Included a description (and relevant explanatory material) as to how SA Power Networks proposed that the DMIS should apply to SA Power Networks during the 2020–25 RCP; and
- Detailed how SA Power Networks’ proposed approach would satisfy the requirements of the National Electricity Law and NER.

As these matters have been fully addressed and considered in the F&A consultation and development process and SA Power Networks is maintaining the same position, we have not repeated this information in this Attachment. Rather, to the extent required that information is incorporated by reference into this Proposal.

The DMIS operates separately to the distribution determination, via an application, reporting and approval process as set out in the DMIS documentation. There are no funds to be determined upfront, with applications being required to be made during the 2020–25 RCP as potential projects arise.

The DMIS provides an incentive to reward DNSPs for finding lower cost solutions as alternatives to investing to augment the capacity of the network, or to replace network assets with traditional like-for-like replacements. We have, so far, identified approximately \$28 million of future network augmentation works that could be candidates for non-network solutions which we will continue to explore as the 2020–25 RCP progresses—these have not been incorporated within our proposed expenditures in this regulatory proposal as they have not yet been deemed efficient.

For individual projects valued at greater than \$5 million we are required to tender for non-network alternatives through the Regulatory Investment Test for Distribution (**RIT-D**) process.

However, with the growth in DER and the emergence of VPPs we consider that there may be new opportunities to procure non-network solutions for smaller projects that fall below the RIT-D value threshold. In November 2018, we released a call for Expressions of Interest (**EOI**) to test the market for non-network solutions to several such smaller constraints, and we continue to engage actively with industry to explore these opportunities.⁸ The EOI sought alternatives to the following constraints:

- sub-station feeder constraint (Elizabeth Downs)—to avoid construction of an additional 11kV feeder in 2019;
- management of an overload of substation feeder under N-1 conditions (Aldinga)—to reduce the amount of load at risk under network fault conditions from 2020; and
- low voltage (LV) area voltage constraint—to alleviate voltage rise on specific LV circuits during times of high PV generation and low load.

⁸ SAPN, *Expression of Interest—Non-network solutions*, November 2018.

In addition, the innovation projects we are considering under the DMIAM, described in the previous section, could also give rise to specific opportunities to deploy non-network solutions that would qualify for the DMIS reward.

Consistent with the DMIS published by the AER in December 2017, SA Power Networks proposes that the AER, in its distribution determination for the 2020-25 RCP, specifies that when applying the DMIS the 'cost multiplier' applicable to any 'eligible project' will be the 'cost multiplier' specified in the version of the DMIS that is in effect under clause 6.6.3 of the NER as at the time at which an 'eligible project' becomes a 'committed project' (i.e. d_v = the 'cost multiplier' of d , in version v of the DMIS).⁹

⁹ AER, *Demand Management Incentive Scheme – Electricity distribution network service providers*, December 2017, clause 2.1(c).

Shortened Forms

ARENA.....	Australian Renewable Energy Agency
DER.....	Distributed Energy Resources
DMIS.....	Demand Management Incentive Scheme
DMIAM.....	Demand Management Innovation Allowance Mechanism
DNSP.....	Distribution Network Service Provider
EOI.....	Expressions of Interest
ENA.....	Energy Networks Australia
EV.....	Electric Vehicle
F&A.....	AER’s Final Framework and Approach
LV.....	low voltage
NEM.....	National Electricity Market
OPCL.....	Off Peak Controlled Load
RCP.....	Regulatory Control period
RIT-D.....	Regulatory Investment Test for Distribution
VPP.....	Virtual Power Plant