

**Demand Management
Innovation Allowance
(DMIA) Annual Report
2014-15**

February 2016

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1. Introduction

The Demand Management Innovation Allowance Scheme (DMIS) as published by the Australian Energy Regulator AER in November 2008. It aims to 'provide incentives for Distribution Network Service Providers to conduct research and investigation into innovative techniques for managing demand so that in the future, demand management projects may be increasingly identified as viable alternatives to network augmentation'. The AER has approved an annual Demand Management Innovation Allowance (DMIA) of \$100,000 (\$2013/14) for ActewAGL Distribution in the 2014-19 period.

This report outlines the costs we are claiming for the Demand Management Innovation Allowance. We have not included any costs recoverable under any other jurisdictional incentive scheme, under any other state or Commonwealth government scheme, or included in forecast opex or capex allowances approved by the AER.

2. Scope of Projects

2.1. Power Factor Correction

ActewAGL Distribution has investigated the impact of power factor correction at low voltage customer premises on distribution network demand, since 2010/11. This programme has now been completed. It included the installation of power factor correction equipment at 48 customer premises and has resulted in approximately 2,270 kVA reduction in maximum demand across the network.

2.2. Residential Battery Energy Storage

ActewAGL Distribution initiated a pilot residential battery energy storage system project in 2014 in association with ActewAGL Retail and Panasonic Australia Limited.

The objective of the trial is to inform future decisions regarding the installation of residential energy storage systems in the ACT. Stage 1 of the trial was carried out during the 2014/15 financial year and included:

- Undertaking a desktop simulation to determine battery energy storage suitability for the ACT from both technical and market size perspectives.
- Undertaking a physical battery energy storage system trial at ActewAGL Distribution's Greenway depot to validate the assumptions from the simulation results. ACT Government electrical inspectors and installation stakeholders have been consulted regarding the technical installation aspects of an energy storage system.
- Evaluating the use of residential battery storage systems for emergency load / demand management, through remotely controlling the discharging and charging of batteries during critical network events.

3. Project Status

3.1. Power Factor Correction

This project was physically completed at the end of the 2013/14 financial year. However, there was \$13,454 in cost in the 2014/15 financial year. Details of installations were included in ActewAGL's DMIA Annual Report of 2013/14.

3.2. Residential Battery Energy Storage

The Stage 1 simulation studies and physical trial as described above were completed during the 2014/15 financial year.

Stage 2 of this project has commenced and involves the installation of 15 pilot solar photovoltaic generation and battery storage systems at selected residential premises throughout the ACT. This trial is being conducted jointly by ActewAGL Distribution, ActewAGL Retail and Panasonic Australia Limited. ActewAGL Distribution will have communications with each installation to enable control over the storage systems to discharge and charge as required by network operations.

This project will allow ActewAGL Distribution to:

- Test the operational and technical performance of the pilot storage batteries.
- Observe the operational, technical and regulatory impacts of battery energy storage upon the electricity network.
- Consider the deferral of capital investment by embedding energy storage in the network rather than augmenting the network to meet forecast maximum demand.
- Consider providing energy storage solutions to ActewAGL's existing zone substations and disaster recovery facility.

Performance of these pilot battery storage systems will be evaluated and reviewed for a period of 12 months.

4. Project Costs

Table 1 below summarises the project costs incurred by each project during 2014/15.

Table 1: Project Costs

| Year | Power Factor Correction | Battery Energy Storage | Total | DMIA Allowance (\$2014/15) |
|---------|-------------------------|------------------------|----------|----------------------------|
| 2014/15 | \$13,454 | \$59,356 | \$72,810 | \$102,390 |

Costs incurred during each project include project development and management costs, including direct labour with overhead costs associated primarily with two engineers on a part time basis, and materials as required.

5. DMIA Criteria

With reference to Clause 3.1.3 of the DMIA scheme document published by the AER in November 2008, the above projects meet the DMIA Criteria as follows:

5.1. Power Factor Correction

- a) The scope of this project is described in Section 2.1 of this report.
- b) The aim of this project was to reduce maximum demand on the network by improving power factor at specific customer connection points, and thus increasing the ratio of power used to power supplied at these sites.
- c) ActewAGL identified through measurements that power factor could be improved at larger customers' points of connection and calculated that reductions in the maximum demands of these customers could be made through the installation of power factor correction equipment.
- d) Discussions took place with "low power factor" customers and power factor correction equipment was designed and installed at 48 customers' premises.
- e) The total cost of this program was \$702,738 with \$13,454 incurred in the 2014/15 financial year.
- f) The benefit of this program has been the reduction in maximum demand across the network of approximately 2,270 kVA which will assist in the deferral of network augmentations. The customers involved have also benefitted from reduced kVA charges.

5.2. Residential Battery Energy Storage

- a) The scope of this project is described in Section 2.2 of this report.
- b) The aim of this project is to investigate the impact of increasing rooftop photovoltaic generation and increasing installations of battery storage systems at residential premises in the ACT. ActewAGL intends to trial the remote control of these batteries to ascertain the feasibility of using them to reduce maximum demand on the network.
- c) The ACT is undergoing an increase in the numbers of rooftop PV generation and faces a potential rapid uptake of residential battery energy storage systems. ActewAGL has identified the potential for these batteries to assist with peak demand control.
- d) Stage 1 has been carried out consisting of desktop studies and a trial at ActewAGL's Greenway Depot. Stage 2 will involve a pilot trial of remotely

controlled battery energy storage systems at 15 selected residential premises throughout the ACT.

- e) The total cost of his program is estimated at \$200,000.
- f) The benefit of this program has yet to be quantified but is expected to be the reduction in peak demands across the network wherever sufficient numbers of controllable residential batteries systems are installed. This should result in the deferral of network augmentations.