DMIS Annual Report 2019-20

September 2020

Demand Management Incentive Scheme Submission

September 2020

Contents

1 INTRODUCTION 1

2 GOVERNANCE 2

2.1 DMIS projects in 2019/20 2

2.2 Compliance with the DMIS 2

3 PART A – COMMITTED PROJECTS 3

3.1 Gillieston Heights demand management project 3

4 PART B – ELIGIBLE PROJECTS 7

4.1 Gillieston Heights demand management project 7

5 DEMAND MANAGEMENT PROJECTS THAT HAVE CHANGED 9

5.1 Previously committed DM projects now deferred or not proceeding 9

5.2 Previously committed DM projects now superseded by network option 9

1 Introduction

This submission has been prepared under the Demand Management Incentive Scheme (DMIS) applied to Ausgrid by the Australian Energy Regulator (AER).

Under Section 2.4 of the AER's Demand Management Incentive Scheme for electricity distribution network service providers 2017, Ausgrid is required to submit an annual report on expenditure under the DMIS for each regulatory year. The annual report must include:

1. Information on **committed projects** (Part A) and **eligible projects** (Part B).
2. For each **committed project**:
    a. The volume of demand management delivered,
    b. An estimate of the realised benefits,
    c. The total incentive to be claimed.
3. For each **eligible project** identified as a preferred option:
    a. The present value of costs and benefits,
    b. A description of responses to the **request for demand management solutions**
        i. Description of proposal,
        ii. Proposed costs and deliverables,
        iii. For a potential credible solution, an estimate of the project's net benefit.
    c. If the project is to proceed as a committed project, whether the project will occur via a **demand management contract** or via a **demand management proposal**.
    d. The expected costs of delivering the demand management solution.
    e. The kVA per year of network demand able to be called upon, influenced, dispatched or controlled.
4. Any projects where a decision has been made to defer or not proceed with an **eligible project** that previously (either in 2018/19 or in previous years) was to proceed as a **committed project,**
5. Any projects where a decision has been made to proceed with a **network option** to meet an identified need that previously was to proceed as a **committed project**.

This submission details DMIS projects undertaken by Ausgrid in the 2019/20 financial year.

2 Governance

2.1 DMIS projects in 2019/20

There was one (1) **committed** demand management projects and one (1) **eligible** demand management project under development in 2019/20.

The eligible project is for the same area as the committed project however, the proposed scope of the demand management solutions is expected to change. This is outlined in section 4 below.

2.2 Compliance with the DMIS

This report has been written in accordance with section 2.4 of the AER's Demand Management Incentive Scheme (Dec 2017).

2.2.1 Demand management project selection criteria

Ausgrid applies cost-benefit assessment to determine whether demand management solutions can reduce demand and/or defer network investment as part of its network planning processes. The cost-benefit assessment is based on net present value (NPV) assessment where all relevant costs and benefits for the preferred network option as well as various demand management deferral options are quantitatively assessed.

For the network option these costs and benefits include:

- The expected capital cost of the preferred network option;
- The expected benefits of implementing the preferred network option which include benefits associated with:
    - Avoided supply interruptions to customers (unserved energy);
    - Avoided maintenance of aged network assets;
    - Avoided environmental impacts; and
    - Avoided safety risk.

For the various demand management deferral options these costs and benefits include:

- The expected costs of delivering demand reductions;
- The time-value-of-money benefit associated with deferring the network option;
- The avoided unserved energy for a given quantum of demand reductions; and
- An option value benefit.

Both the preferred network option and demand management options include a terminal value benefit in the NPV assessment.

The option with the highest net present value is preferred.

3 PART A – Committed Projects

3.1 Gillieston Heights demand management project

In the 2018/19 DMIS Annual Report, Gillieston Heights was reported as an Eligible Project. In section 4.1.3 of the 2018/19 report, we described how, in accordance with the **minimum project evaluation requirements** of the DMIS, we issued a **request for demand management solutions.**

We received no viable submissions from the market. After an assessment of internal capability, we determined that this project could proceed as a **demand management proposal** using principally an air-conditioning load control solution developed as part of an earlier Ausgrid innovation project. This solution was implemented in summer 2019/20. The target demand reductions were 130kVA, comprised of 110kVA from participating residential air-conditioning customers and 20kVA from participating residential battery storage customers, at an estimated cost of $55,000.

For the air air-conditioner load reductions, a total of 2,800 customers in the Gillieston Heights area were sent a letter in mid-September 2019, with follow-up letters in October, encouraging them to participate in the Aircon Saver program. This letter explained how they could earn up to $250 by participating in Ausgrid's Power2U Aircon Saver program in 2019/20. The letter invited them to register their interest via Ausgrid's website, confirm their contact and air-conditioner details and initiate Ausgrid's assessment process.

The customer registration process was open for 8 weeks between 16 September and 19 November 2020 during which time 131 registrations were received (5% response rate). From this group, 45 customers (49 eligible AC units) were deemed eligible (compliant with AS4755, cooling capacity greater than 4kVA and written consent for tenanted premises). While the 5% response rate was lower than that experienced in Ausgrid's previous Aircon Saver trials, the 34% share of compliant air conditioners was much higher than in past trials of the solution. This indicates that a growing share of the installed air conditioners are compliant with the AS4755 standard.

Demand Response Enabling Devices (DREDs) were installed on 49 air-conditioning units (1 customer withdrew prior to installation) at 45 customers' premises to enable them to receive Ausgrid's control signals.

Following detailed discussions with Ausgrid's battery virtual power plant provider and other battery providers, efforts to obtain demand response from battery storage customers were not successful and so no demand reductions were obtained from this source.

Three demand response dispatch events were scheduled and delivered over Summer 2019/20.

3.1.1 2019/20 demand management costs

Development and implementation costs for the Gillieston Heights project were $59,479 in opex in 2019/20. These costs included $25,326 in external contracted services, $9,570 in customer incentives and $24,583 in internal labour and overhead for customer acquisition, purchase and installation of DREDs and dispatch operations.

3.1.2 Volume of demand management delivered

Analysis of customer interval meter data showed that the average demand reduction achieved was about 1.7kW per customer. Applying this per-customer demand reduction across the 45 customers participating in the program gives an estimated total demand reduction capability of 96kVA (assuming a power factor of 0.80). See Figure 1 and 2 below showing daily demand curves for dispatch events on 23 January 2020 and 1 February 2020.

Figure 1: Dispatch event 23 January 2020

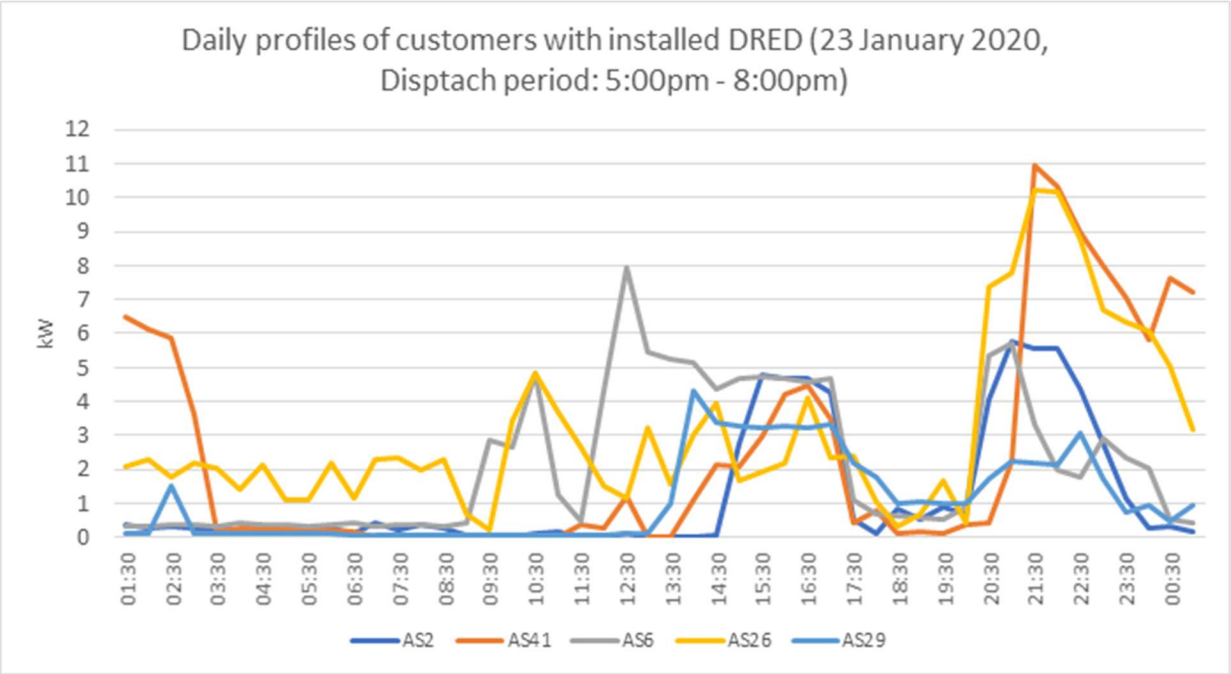
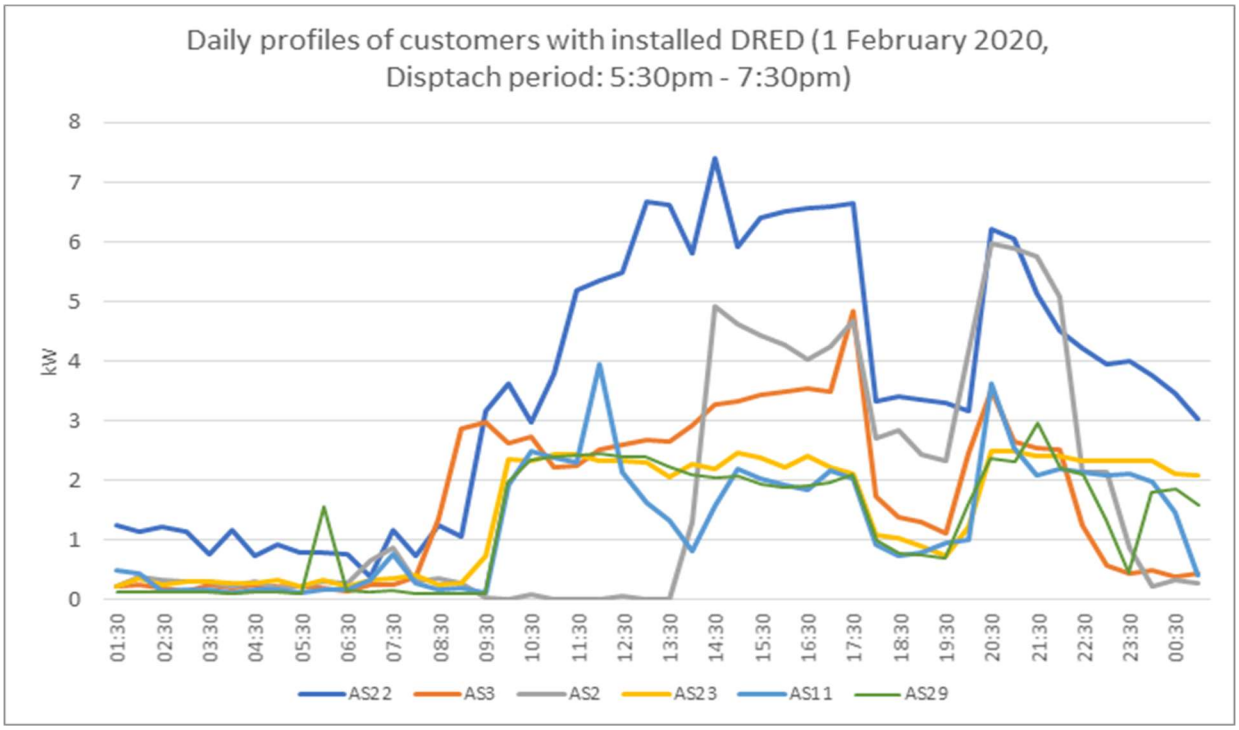


Figure 2: Dispatch event 1 February 2020



3.1.3 Estimate of realised benefits

Per the volume of demand reduction capability delivered noted in 3.1.1 above and the cost benefit assessment for the project deferral, the realised benefits of the demand management option are estimated to be about $0.37 million present value. This total includes actual or estimated values for:

- benefits delivered by the DM program including option value;

- benefits delivered by the network solution deferred by one year;
- residual value of the network solution at the end of analysis period;
- cost of the network solution deferred by one year; and
- cost of the DM program.

3.1.4 Claimed incentive

Applying Equation 1:

$$PV\ incentive_i \leq \max\{dv \times E\ [PV\ DMcost_i - S_i]\ ,0\}$$

Subject to the constraint:

$$d_v \times E[PV\ DMcost_i] \leq E[NPV_i]$$

where:

- Subscript i means the parameter concerns committed project i.
- PV is the present value at time t. A parameter following PV is in real dollars at time t
- $incentive_i$ is the project incentive for each project i.
- max {.} means the higher of the values within the brackets that are separated by commas.
- Si is the total subsidies provided to the distributor in connection with providing the demand management component of project i.
- E[.] denotes an expected value, which has been calculated when project i became a committed project.
- D$Mcost_i$ is project i's demand management costs.
- NPV_i is the expected relevant net benefit of committed project i.
- d_v=d_1=50%

The expected project costs when the project became a committed project were $55,000.

The expected total subsidies when the project became a committed project were $0.

Therefore, per equation 1, $PV\ incentive_i$ = max (0.5 x $55,000,0) = $27,500

The expected relevant net benefit was $0.38m.

Therefore, the constraint is satisfied as the calculated incentive of $27,500 is below the expected net benefit of $0.38m. The claimed incentive is also below the 1% of Ausgrid's annual smoothed revenue requirement.

Note that actual costs in 2019/20 were higher than estimated with actual costs of $59,479. The net benefit calculation at these costs are $0.374m.

3.1.5 Accruing of project incentives

In accordance with Section 2.5 of the DMIS Guidelines Dec 2017, Ausgrid proposes that the following table should summarise the incentives and accruals of committed projects:

Table 1: Accrual of project incentives

Description	2019/20	2020/21	2021/22	2022/23	2023/24
Gillieston Heights accrued incentive	$27,500				
Total incentive accrued to projects	$27,500				

1% AR cap[1]	$14,468,000				
Total accrued (up to cap)	$27,500				
Incentive to be paid (2-year lag)			$27,500		

[1] https://www.aer.gov.au/system/files/AER%20-%20Final%20decision%20-%20Ausgrid%20distribution%20determination%202019-24%20-%20Attachment%201%20-%20Annual%20revenue%20requirement%20-%20April%202019.pdf

4 PART B – Eligible Projects

4.1 Gillieston Heights demand management project

4.1.1 Description of need

Following the demand reductions achieved in summer 2019/20, updated demand forecasts indicate the continued existence of a network need in summer 2020/21 and beyond, driven by customer connections activity in the area.

Based on the assessment process described in 2.2.1, Ausgrid has determined that demand management is likely to offer a cost-efficient deferral of the proposed preferred network solution by another year and therefore Ausgrid considers Gillieston Heights an Eligible Project for summer 2020/21.

4.1.2 Expected costs and benefits

The following table summarises the present value of expected costs and benefits determined using the process described in Section 2.2.1 of this report.

The figures below include a variation in the scope compared to summer 2019/20. The types of demand reductions to be deployed in summer 2020/21 will be different to summer 2019/20 and will include:

- Market participant (Retailer) supplied behavioural demand response;
- Market participant (Retailer) supplied grid-based battery support; and
- Ausgrid delivered air-conditioning load control as implemented in summer 2019/20.

Table 2: Expected costs and benefits

Option	Deferral period	PV of Benefits ($m)	PV of Costs ($m)	NPV ($m)
network option	-	1.09	-0.73	0.37
DM	1 year	1.12	-0.75	0.37
DM	2 years	1.15	-0.77	0.38
DM	3 years	1.14	-0.81	0.34

Ausgrid considers that the deferral options and the network option are equivalent in NPV terms and consequently selects the demand management option as the preferred option. with a review in 2021 to assess current conditions.

4.1.3 Demand management proposal

Ausgrid intends to proceed with the deferral of the proposed supply solution at Gillieston Heights as a **demand management proposal** which is summarised in Section 4.1.4 below.

As described in the Ausgrid's 2019 DMIS annual report, a request for **demand management proposals** was issued in 2019 which yielded no viable market-led solutions.

The air-conditioning load control method will again be deployed. The Retailer supplied network support from a grid-based battery and behavioural demand response will provide the necessary additional demand reductions to meet increased load at risk in the affected network area.

4.1.4 Ausgrid proposal

Proposal No.	1
Description	Blended solution including: • air-conditioning (AC) load control • Retailer supplied behavioural demand response • Retailer supplied grid-based battery support
Deliverables	Demand reductions via: • AC load control using ripple control signals to DREDs installed on participating customer AC units • Retailer supplied residential demand response • Retailer supplied Grid-based battery support
Cost	$52,600
Assessment	Cost-benefit assessment indicates solution is economically feasible to reduce the load at risk on the relevant 11kV feeders in summer 2020/21. Expected NPV = $0.37 million. Deferral beyond summer 2020/21 will be considered post-summer 2020/21.

4.1.5 Preferred option

On the basis that the Ausgrid proposal for a 1year deferral offers an equivalent NPV to the network option as shown in Table 2 above, Ausgrid considers it to be an efficient solution. Due to the reasons given in section 4.1.3, Ausgrid has decided to proceed with the demand management project as a **demand management proposal**.

As noted above, the expected cost for the demand management is $52,600.

Further deferral may be possible, contingent upon re-assessment of the benefits and costs post-summer 2020/21.

4.1.6 Amount of demand reductions

The target demand reduction in summer 2020/21 is 1160 kVA.

5 Demand Management Projects That Have Changed

In accordance with 2.4 (6) and (7) of the DMIS, this section describes projects where Ausgrid has decided to either:

- Defer or not proceed with an eligible project that it had previously decided (either in 2019/20 or in previous years) to proceed with as a **committed** (demand management) **project**; OR
- Proceed with a network option to meet an identified need that it had previously decided to meet by means of a project that was a **committed** (demand management) **project**.

5.1 Previously committed DM projects now deferred or not proceeding

None.

5.2 Previously committed DM projects now superseded by network option

None.