



Decision

Approval of Demand Management Innovation Allowance (DMIA) expenditures by Victorian electricity distributors in 2019

November 2020

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Shortened forms

Shortened form	Extended form
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ARC	Australian Research Council
ARENA	Australian Renewable Energy Agency
augex	augmentation expenditure
capex	capital expenditure
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DER	distributed energy resource
DM	demand management
DMIA	demand management innovation allowance
DMIS	demand management incentive scheme
DNSP	distribution network service provider
DRED	demand response enabled device
LV	low voltage
IOT	internet of things
MW	megawatt
NEL	national electricity law
NEM	national electricity market
NEO	national electricity objective
NER	national electricity rules
NNA	non-network alternatives
NSP	network service provider
opex	operating expenditure
PV	photovoltaic
VPP	virtual power plant

1. Summary

The Demand Management Innovation Allowance (DMIA) aims to provide incentives for Distribution Network Service Providers (DNSPs) to conduct research and investigation into innovative techniques for managing demand. It also aims to enhance industry knowledge of practical demand management projects and programs through the publication of annual project summary and expenditure reports. The DMIA is part of the Demand Management Incentive Scheme (DMIS) (before 2017) which has been applied to all DNSPs in the national electricity market (NEM) as part of the distribution determinations we made before June 2019.

This report presents our assessment of five Victorian DNSPs' annual expenditure claims under the pre-2017 scheme, based on the distributors' DMIA reports for the calendar year 2019 submitted on 30 April 2020. A separate report for the 2018-19 financial year reporting period of the eight Qld, NSW, ACT, SA and Tasmanian electricity distributors was published by us separately in June 2020.

The Victorian DNSPs sought approval of expenditure totalling approximately \$1.02 million for seven projects. The AER has assessed that the projects have met the DMIA expenditure criteria and have therefore approved the expenditure for all the projects.

DMIA is provided to each DNSP in the form of a fixed allowance for each regulatory control period. We review and approve DNSPs' actual DMIA expenditures on demand management projects after the end of each year. We will reject any DMIA expenditure that do not meet the requirements of the DMIA scheme.

If a DNSP has not spent its total DMIA allowance amount in the regulatory control period, it will be required to return the underspent amount to customers in the form of a tariff reduction in the ensuing regulatory control period. However, any overspent amount would be borne by the DNSP.

DNSPs are required to report their DMIA expenditures and activities to us each regulatory year. We approve or reject DNSPs' claims based on our assessment against the six criteria listed in section 2 of this paper. While descriptive, the criteria enable a wide range of demand management project options.

In December 2017, we established a new Demand Management Innovation Allowance Mechanism (DMIAM) to replace the current DMIA in the forthcoming regulatory control periods of all DNSPs. Details of the new DMIAM and DMIS are available from our web site at <https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/demand-management-incentive-scheme-and-innovation-allowance-mechanism>.

The DMIA expenditures covered by this decision relate to the pre-2017 schemes that apply to all DNSPs rather than under the 2017 DMIAM scheme. For Victorian DNSPs, pre-2017 DMIA schemes were published in April 2009 (updated in November 2014).

How distributors used the DMIA

Distributors have different approaches for utilising the DMIA funding. Figure 1 compares our total allowance with actual expenditure by Victorian distributors for the current 2016–2020 regulatory period.¹

Of the five Victorian distributors reviewed, AusNet Services has claimed above its total DMIA allowance. Any overspend is met by the business from its existing budget or other external funding, rather than from its customers.

Overall, however, Victorian distributors by their fourth year (2019) have spent an average of 65 per cent of their DMIA allowances.

CitiPower and Powercor have significantly underspent their allowances to date, spending only 3 per cent and 33 per cent respectively.

Further, the majority of these projects were approved in previous years and are continuing into 2019.

Some DNSPs stated that some of their DMIA trials were successful and that the projects would be implemented as business as usual (BAU) activity within their networks. Examples of such projects are:

- AusNet Services' grid energy storage system (GESS) trial
- United Energy's voluntary residential demand response trial ('Summer Saver program')

AusNet Services stated in its DMIA report that:

...the GESS was upgraded with various functional enhancements and reliability improvements to enable it to be relocated to Mallacoota to be used as a BAU facility to improve power supply reliability in the region.²

After the experience of the GESS trial to date, confidence has been gained within the business regarding system operability and reliability. The project to relocate the facility has been initiated within the 'business as usual' environment and is now serving to embed the learning from the innovation trial into the network engineering and field engineering functions of the business.³

United Energy reported that:

UE has been deploying the Summer Saver demand management program since summer 2013/14. Originally conceived as a DMIA project, it is now fully transitioned to a business-as-usual program...⁴

United Energy concluded its Summer Saver trial and committed to this project in 2019 as an ongoing non-network expenditure under the new DMIS.

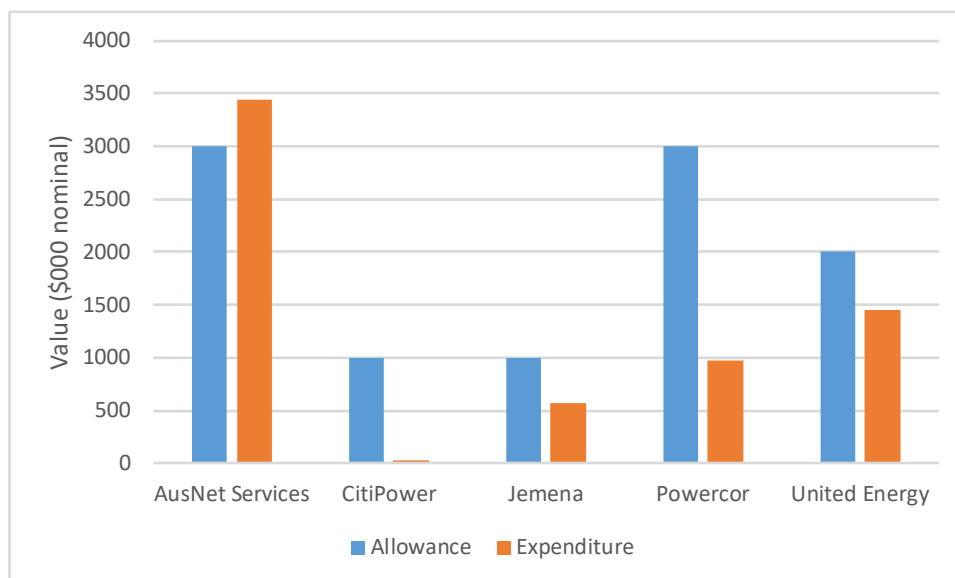
¹ We have approved all the DMIA expenditure claimed by the DNSPs as the expenditures comply with the DMIA criteria.

² AusNet Services, *Demand Management Innovation Allowance Annual Report 2019*, 30 April 2020, p. 13.

³ AusNet Services, *Demand Management Innovation Allowance Annual Report 2019*, 30 April 2020, p. 14.

⁴ United Energy, *Demand Management Incentive Scheme Compliance Report – 2019*, 30 April 2020, p. 4. The Summer Saver program was implemented in 2019 in place of UE's distribution system augmentation program (which was to augment overloaded distribution substations and low-voltage circuits to maintain reliability of supply).

Figure 1 DMIA – comparison of regulatory period allowance vs expenditure to date



Source: AER analysis and DMIA reports submitted by DNSPs.

Table 1 VIC DNSPs DMIA expenditures for the 2016–2020 regulatory control period (\$'000, nominal)

DNBP	DMIA approved for 2016 (\$'000 nominal)	DMIA approved for 2017	DMIA approved for 2018	DMIA approved for 2019	Total DMIA allowance for period	Total DMIA approved	DMIA remaining for period	Percent of DMIA spent
AusNet Services	1499	861	794	286	3000	3439	-439	115%
CitiPower	0	28	0	0	1000	28	972	3%
Jemena	111	200	239	25	1000	574	426	57%
Powercor	0	28	624	323	3000	975	2025	33%
United Energy	505	350	211	385	2000	1451	549	73%
TOTAL	2115	1468	1867	1018	10000	6468	3532	65%

Source: AER analysis and DMIA reports submitted by DNSPs. Numbers may not add up due to rounding.

DNBP's DMIA expenditures by activity types

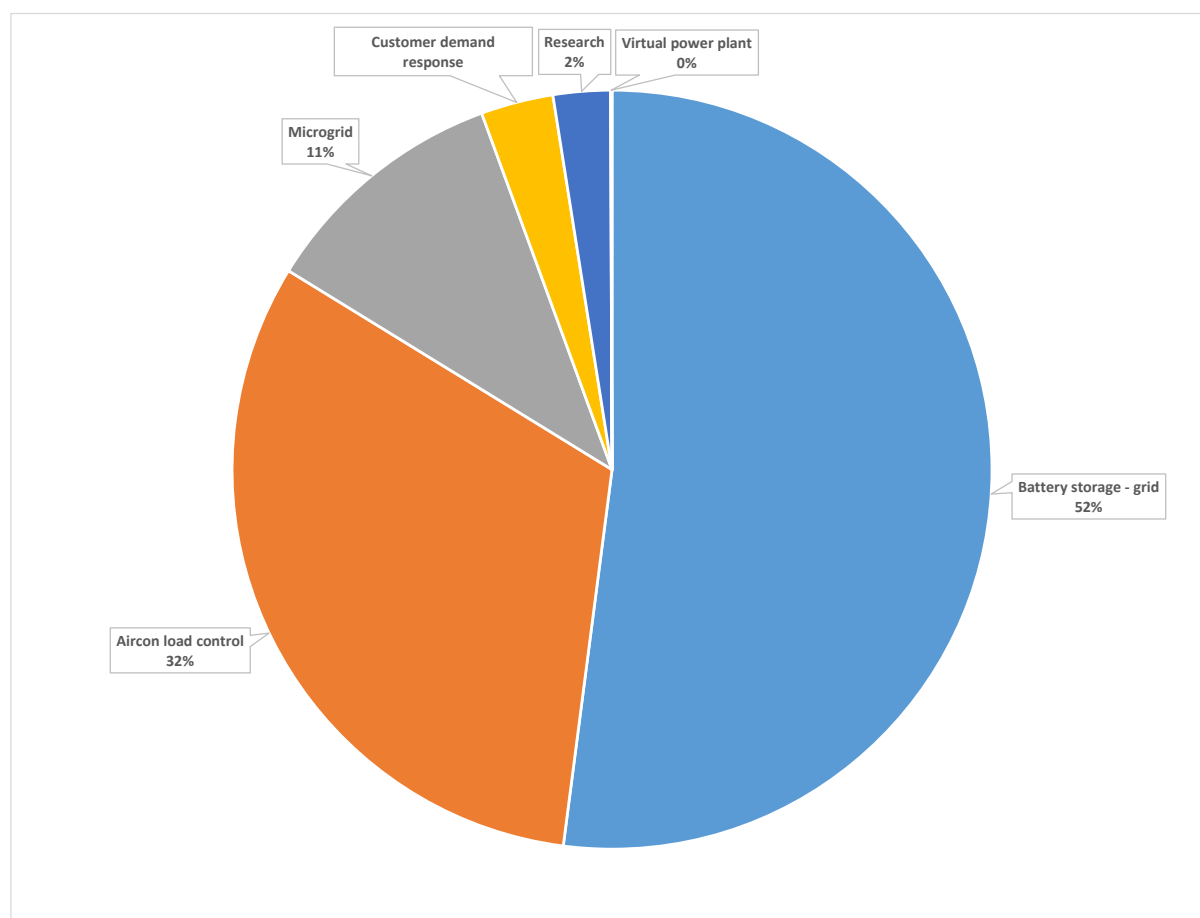
Figure 2 summarises the expenditure by types of projects provided under the DMIA. The projects undertaken vary considerably in both their nature and scale.

A large proportion of expenditure (52 per cent) was related to projects exploring battery storage for the network grid. Thirty-two per cent of all DMIA expenditure was for residential load control trials and 11 per cent for mini-grid projects. Examples of projects include:

- AusNet Services' grid energy storage system trial
- United Energy's grid-side battery energy storage systems pilot project
- United Energy's residential demand response trial (including air-conditioner load control)
- Powercor's energy partner demand response program.

- AusNet Services' community mini-grid trial

Figure 2 DMIA expenditure by project type – 2019



Source: AER analysis and DMIA reports submitted by DNSPs

Table 2 DMIA expenditure by project type – 2019

Project type	Expenditure (\$ nominal)
Battery storage - grid	529,946
Air conditioning load control	323,049
Microgrid	108,364
Customer demand response	31,391
Research	24,721
Virtual power plant	654
TOTAL	1,018,125

Note: numbers may not add up due to rounding.

Structure of this report

The remainder of this report is structured as follows:

Chapter 2 provides background information on the DMIS and DMIA.

Chapter 3 provides the criteria contained in the DMIS, against which we are required to assess the service providers' claims for the DMIA each year.

Chapter 4 summarises the results of our compliance assessment of service providers' DMIA reports and supporting information.

Chapters 5 to 9 provide our assessment of service providers' DMIA expenditure claims against the criteria contained in the DMIS.

2. Background

The Demand Management Innovation Allowance (DMIA) aims to provide incentives for Distribution Network Service Providers (DNSPs) to conduct research and investigation into innovative techniques for managing demand. It also aims to enhance industry knowledge of practical demand management projects and programs through the publication of annual project summary and expenditure reports. The DMIA is a part of the pre-2017 Demand Management Incentive Scheme (DMIS), which has been applied to all DNSPs in the national electricity market (NEM) as part of our current distribution determinations.

A key objective of the DMIA is to assist in enhancing industry knowledge of practical demand management projects through the annual publication of DMIA activity reports from DNSPs. As such, we set out annual reporting requirements for DNSPs for the regulatory control period. DNSPs are required to submit a report to the AER on their DMIA expenditure shortly after the end of each regulatory year, providing details of the initiatives they have introduced. We use the information provided in a DNSP's annual DMIA report in our assessment of a DNSP's compliance with the DMIA criteria and entitlement to recover expenditure under the DMIA. The DNSP's report also provides information to stakeholders more broadly on the nature of the DMIA projects that may ultimately be progressed to operating activities or more mature investments. The information may also facilitate the participation of non-network providers for those projects that go beyond the research or testing phase.

In December 2017, we established a new and improved Demand Management Innovation Allowance Mechanism (DMIAM) to replace the DMIA for regulatory control periods commencing after 30 June 2019. We also undertook a review of the DMIS and made significant enhancement to the scheme. Details of the new DMIAM and DMIS are available from our web site at <https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/demand-management-incentive-scheme-and-innovation-allowance-mechanism>.

The DMIA schemes for the current regulatory control periods were published:

- in October and November 2008 for the non-Victorian DNSPs
- in April 2009 (updated in November 2014) for Victorian DNSPs.

This report relates to the operation of the current DMIA scheme only (before the December 2017 version). Also, this report includes only the five DNSPs in Victoria, who provided their DMIA reports for financial year 2019 on 30 April 2020.

To ensure that DNSPs appropriately utilise the DMIA funding, there is an overall expenditure true-up process in the second year of the next regulatory control period. After the results for the five years of the current regulatory control period are known, a single adjustment will be made to return the amount of any underspent or unapproved DMIA amounts to customers. This ensures that the scheme remains neutral in terms of the expenditure profile which the DNSP adopts during the regulatory control period. As the Victorian DNSPs are only in the fourth year of their 2016–2020 regulatory control period and the results for the five years of this period are not yet known, there is no need yet for this true-up process and adjustment.

3. Demand Management Incentive Scheme criteria

Each year we are required to assess claims for the innovation allowance against the DMIA criteria. The DMIA criteria are:

Criteria #1: Demand management projects or programs are measures undertaken by a DNSP to meet customer demand by shifting or reducing demand for standard control services through non-network alternatives, or the management of demand in some other way rather than increasing supply through network augmentation.

Criteria #2: Demand management projects or programs may be:

a. broad-based demand management projects or programs — which aim to reduce demand for standard control services across a DNSP's network, rather than at a specific point in the network. These may be projects targeted at particular network users, such as residential or commercial customers, and may include energy efficiency programs; and/or

b. peak demand management projects or programs — which aim to address specific network constraints by reducing demand on the network at the location and time of the constraint.

Criteria #3: Demand management projects or programs may be innovative, and designed to build demand management capability and capacity and explore potentially efficient demand management mechanisms including, but not limited to, new or original concepts.

Criteria #4: Recoverable projects and programs may be tariff or non-tariff based.

Criteria #5: Costs recovered under this scheme:

a. must not be recoverable under any other jurisdictional incentive scheme

b. must not be recoverable under any other state or Australian Government scheme

c. must not be included in forecast capital or operating expenditure approved in the distribution determination for the regulatory control period under which the scheme applies, or under any other incentive scheme in that determination.

Criteria #6: Expenditure under the DMIA can be in the nature of capex or opex.

4. DMIA assessment

4.1. Annual DMIA assessment

We conducted our DMIA compliance assessments based on the DMIA reports from the following DNSPs:

For the 2019 financial year:

- AusNet Services (year 4 of the regulatory control period)
- CitiPower (year 4 of the regulatory period)
- Jemena Electricity Network (year 4 of the regulatory period)
- Powercor (year 4 of the regulatory period), and
- United Energy Distribution (year 4 of the regulatory period).

Distributors have different approaches for utilising the DMIA funding. Summaries of each DNSP's DMIA expenditures are shown in the table 3 below.

While the allowance is for the whole of the 2016 to 2020 regulatory period, the expenditure column gives expenditure to date (2016 to 2019).

Of the five distributors reviewed, AusNet Services has claimed above its total DMIA allowance. The other four DNSPs have underspent their allowance to date, with CitiPower and Powercor having significant underspending.

Table 3 VIC DNSPs' DMIA expenditure for the 2016–2020 regulatory control period (\$'000, nominal)

(\$'000 nominal) DNSP	DMIA approved for 2016	DMIA approved for 2017	DMIA approved for 2018	DMIA approved for 2019	Total DMIA allowance for period	Total DMIA approved	DMIA remaining for period	Percent of DMIA spent
AusNet Services	1499	861	794	286	3000	3439	-439	115%
CitiPower	0	28	0	0	1000	28	972	3%
Jemena	111	200	239	25	1000	574	426	57%
Powercor	0	28	624	323	3000	975	2025	33%
United Energy	505	350	211	385	2000	1451	549	73%
TOTAL	2115	1468	1867	1018	10000	6468	3532	65%

Source: AER analysis and DMIA reports submitted by DNSPs. Numbers may not add up due to rounding.

5. AusNet Services 2019

We approve AusNet Services' DMIA expenditure of \$285,533 in 2019 for three projects because these meet the DMIA criteria. This approved amount does not include any amount AusNet Services overspent above its 2016–20 DMIA allowance. The following section sets out our assessment of the individual projects. Detailed information about these projects is available in AusNet Services' 2019 DMIA report⁵ which is published separately on the AER website at [Networks & pipelines - Compliance reporting – Demand management incentive scheme report](#).

Continuing Projects

5.1. Mooroolbark community mini-grid trial

5.1.1. Project Overview

The project involves the design, build and operation of a mini-grid of 18 residential houses in Mooroolbark, Victoria. The mini-grid will be monitored and controlled by a cloud-based mini grid control system that can implement Distribution System Operator (DSO) control functions and algorithms. The project aims to:

- understand the potential of concentrated and controllable distributed energy resources (DER) in providing demand management and network support, as well as the techniques to achieve this
- develop strategies to manage an increasing level of customer-driven DER
- learn how to facilitate community driven initiatives such as renewable energy projects and micro grids in a way that is efficient and beneficial to the network.

The project will also test the performance of DER systems in providing backup supply to individual customers in case of network outage, and the ability for the mini-grid to operate as an island (grid-separated mode) for short periods of time, with sharing of power between customers in order to maintain system stability and longevity.

In 2018 the Mooroolbark community mini-grid trial progressed into Stage 2 to focus on voltage control. The battery equipment for all the trial customers were removed and decommissioned. Designs were explored for a new powerline communication (PLC) for the solar PV systems. The stabiliser functionality was upgraded to enhance its capability to better manage voltage on the network.

In 2019, AusNet Services initiated, installed and commissioned upgrades to the stabiliser and claimed DMIA expenditure of \$108,364. Further DMIA costs are expected in 2020 to finalise the project.

5.1.2. Assessment against DMIA criteria

Criteria #1 Coordinated DER will reduce network peak demand, reduce energy at risk, potentially defer asset augmentation, and increase supply reliability by providing islanded supply to customers during outages.

⁵ AusNet Electricity Services Pty Ltd, *Demand Management Innovation Allowance Annual Report 2019*, April 2020.

Criteria #2 This is a peak demand management program.

Criteria #3 The trial project will test the technical viability of the mini-grid to demonstrate the above stated benefits (in Criteria #1), test customers' appetite and acceptance, and evaluate the economic viability of different structures of mini-grids and community energy projects. The lessons from the project will help build AusNet Services' toolkit for delivery of non-network and demand-side solutions. If the services provided were unregulated (not classified as standard control or alternative services), AusNet Services would need to provide these whilst complying with ring-fencing requirements.

Criteria #4 The project is non-tariff based.

Criteria #5 AusNet Services stated that its DMIA expenditure for this project is not being recovered through any other jurisdictional, state or Australian Government scheme, nor through any other part of the distribution determination for the current regulatory control period.

Criteria #6 Expenditure is in the nature of opex (\$22310) and capex (\$86054) for a total of \$108364.

5.2. Grid energy storage system trial

5.2.1. Project overview

In 2012, AusNet Services initiated a grid-scale energy storage system (GESS) project to trial the use of a large battery storage system to defer asset augmentation by managing peak demand and explore other benefits of storage systems to network management. The GESS will shift demand on a particular feeder from peak to off-peak times by discharging during feeder peaks and recharging overnight when the feeder demand is low. The GESS is suited to addressing a specific network constraint and is containerised to allow portability to different locations as required.

During 2018 AusNet Services' GESS trial continued, with the potential relocation of the GESS being developed. AusNet Services reported that, with the trial, the business gained confidence regarding system operability and reliability. The project to relocate the facility was initiated within the 'business as usual' environment and served to embed the learnings from the trial into the network engineering and field engineering functions of the business.

In 2019, AusNet Services claimed DMIA expenditure of \$145,778 for this project. These costs were for the ongoing operation of the facility and upgrades to the GESS to enable it to be relocated to an area of network need that could benefit AusNet Services' customers.

5.2.2. Assessment against DMIA criteria

Criteria #1 Using large-scale storage connected at grid level enables AusNet Services to defer asset augmentation, reduce the risk of asset overloads, improve power quality and mitigate the risk of customer outages.

Criteria #2 This is a peak demand management program.

Criteria #3 The trial will provide AusNet Services practical experience to better understand and assess the level of network value of grid-scale energy storage. This trial will also help to

establish whether battery storage is a credible non-network solution to managing demand. Further, the trial will help set the parameters on when GESS can be economically deployed for the benefit of energy consumers.

Criteria #4 The project is non-tariff based.

Criteria #5 AusNet Services stated that its DMIA expenditure for this project is not being recovered through any other jurisdictional, state or Australian Government scheme, nor through any other part of the distribution determination for the current regulatory control period.

Criteria #6 Expenditure is in the nature of opex.

Closing Project

5.3. Peak Partners (voluntary residential peak demand response)

5.3.1. Project overview

The project, which commenced in the summer of 2017–18, is a residential demand response (DR) project, targeting a 22kV distribution feeder in the urban growth corridor around Clyde North, Victoria. It is a small-scale proof-of-concept project for different types of demand response:

- behavioural response to a Critical Peak Rebate incentive, with advanced metering infrastructure (AMI) data portal (delayed data);
- behavioural response to a Critical Peak Rebate incentive, with real-time data portal;
- air-conditioning load control via a Demand Response Enabling Device (DRED)
- Supply Capacity Control (marketed as ‘Essential Power’) via the AMI smart meter.

In 2017–18 AusNet Services proposed three offers (Critical Peak Rebate offer, Air conditioning load control, and Supply Capacity Control) to customers on the CLN23 feeder that includes parts of the Victorian suburbs of Berwick, Clyde North and Narre Warren South. AusNet Services reported that the project was successful in proving both a strong level of customer demand response during events (40% reduction) and an overall positive customer experience (96% willing or very willing to recommend to friends and neighbours).

AusNet Services claimed DMIA expenditure in 2019 of \$31,391 for this project. This project was concluded in 2019 with the removal of hardware and decommissioning of the software platform.

5.3.2. Assessment against DMIA criteria

Criteria #1 Peak demand on AusNet Services network is driven primarily by residential customers and, in particular, residential summer air-conditioning. The Peak Partners program is designed to reduce the network peak demand, thereby reducing the level of energy at risk on the network, potentially deferring network augmentation, reducing the network costs ultimately borne by customers, and improving network reliability and quality of supply for customers.

Criteria #2 This is a peak demand management program.

Criteria #3 The project seeks to prove the concept of voluntary residential demand response in a live environment and real world conditions, and to gain insights into the price sensitivity of customer load and the effectiveness and acceptability of a range of approaches such as behavioural response and appliance load control.

Criteria #4 The project is non-tariff based.

Criteria #5 AusNet Services stated that its DMIA expenditure for this project is not being recovered through any other jurisdictional, state or Australian Government scheme, nor through any other part of the distribution determination for the current regulatory control period.

Criteria #6 Expenditure is in the nature of capex.

6. CitiPower 2019

CitiPower did not conduct any DMIA project or incur any DMIA expenditure in 2019. CitiPower's 2019 DMIA report⁶ is published separately on the AER's website at [Networks & pipelines - Compliance reporting – Demand management incentive scheme report..](#)

7. Jemena 2019

We approve Jemena's DMIA expenditure of \$24,271 in 2019 for one project because this meets the DMIA criteria. The following section sets out our assessment of the project. Detailed information about this project is available in Jemena's 2019 DMIA report⁷ which is published separately on the AER website at [Networks & pipelines - Compliance reporting – Demand management incentive scheme report.](#)

New Project

7.1. Discovery assessment service

7.1.1. Project overview

The project involved a study of Jemena's demand management roadmap, and a desktop study and validation of a platform for scalable energy internet of things (IOT) in the context of Jemena's demand management roadmap. The scalable energy IOT platform refers to a DM system utilising appliance level or gateway device hardware in conjunction with a cloud-based management system to aggregate and orchestrate four different demand response activities in response to demand response events. These four activities are: behavioural residential demand response, direct load control, commercial and industrial demand response, and voltage reduction. The platform was made by a third party called [c-i-c].

Jemena claimed DMIA expenditure in 2019 of \$24,721.

⁶ CitiPower, *CitiPower 2019 – Annual – DMIA Report*, 30 April 2020.

⁷ Jemena, *Jemena 2019 – Annual – DMIA Report*, 30 April 2020.

7.1.2. Assessment against DMIA criteria

Criteria #1 This project studied Jemena's demand management roadmap and a platform for scalable energy IOT. Jemena needed to better understand its system capabilities to provide an integrated and scalable demand response solution in the future.

Criteria #2 This is a broad-based demand management program.

Criteria #3 The project is designed to study and build Jemena's demand management capability, including new concepts.

Criteria #4 The project is not tariff-based.

Criteria #5 Jemena stated that its DMIA expenditure for this project not being recovered through any other jurisdictional, state or Australian Government scheme, nor through any other part of the distribution determination for the current regulatory control period.

Criteria #6 Expenditure is in the nature of opex.

8. Powercor 2019

We approve Powercor's DMIA expenditure of \$323,049 in 2019 for one project because this meets the DMIA criteria. The following section sets out our assessment of the project. Detailed information about this project is available in Powercor's 2019 DMIA report⁸ which is published separately on the AER website at [Networks & pipelines - Compliance reporting – Demand management incentive scheme report](#).

Continuing Project

8.1. Energy partner program

8.1.1. Project overview

Powercor identified highly variable load at risk in its high-voltage feeder network and two zone substations on the Bellarine Peninsula, Victoria. To address this, the Energy Partner program was designed to identify air-conditioner demand response initiatives to support the network or possibly defer future network augmentation. The program incentivised customers for demand response by directly controlling customers' air-conditioners for a short period of time (around three hours) using a 'Sensibo Sky' device. This device allowed Powercor to coordinate the temperature set points of more than 900 air-conditioners in the Bellarine Peninsula.

During 2018 the program signed up almost 1,500 customers and installed more than 1,000 devices. For the four demand response events called over the 2018–19 summer a participation rate of greater than 90 per cent was achieved. Powercor was able to temporarily decrease customer demand by approximately 30 per cent over the three-hour event period.

⁸ Powercor, *Powercor 2019 – Annual – DMIA report*, 30 April 2020.

Powercor claimed DMIA expenditure of \$323,049 in 2019 for this project. The 2019/2020 summer trial was to reduce load at risk on distribution substation across the Powercor network. For this summer, 36 devices across distribution substations were installed.

8.1.2. Assessment against DMIA criteria

Criteria #1 The project is aimed at reducing residential demand during demand response events on the Bellarine Peninsula where highly variable load at risk was identified. Customers are incentivised to allow Powercor to coordinate temperature set points on their air-conditioners for approximately three hours.

Criteria #2 This is a peak demand management project.

Criteria #3 The project is designed to reduce the peak load on the Bellarine Peninsula, thereby avoiding augmentation costs or increased load risk.

Criteria #4 The project is non-tariff based.

Criteria #5 Powercor stated that its DMIA expenditure for this project is not being recovered through any other jurisdictional, state or Australian Government scheme, nor through any other part of the distribution determination for the current regulatory control period.

Criteria #6 Expenditure is in the nature of capex.

9. United Energy 2019

We approve United Energy's DMIA expenditure of \$384,822 in 2019 for two projects because these meet the DMIA criteria. The following section sets out our assessment of the individual projects. Detailed information about these projects is available in United Energy's 2019 DMIA report⁹ which is published separately on the AER website at [Networks & pipelines - Compliance reporting – Demand management incentive scheme report.](#)

New Project

9.1. Grid-side battery energy storage systems pilot project

9.1.1. Project overview

The project aimed to trial grid-side controlled battery energy storage systems (BESS) to address immediate capacity shortfalls and defer network augmentation. Pole-mounted grid-side BESS would be installed at selected constrained distribution substations. United Energy identified 75 suitable sites to trial a BESS solution. Specific poles have been identified in Victorian suburbs (Black Rock, Highett and Keysborough). The project is on the delivery phase and the first unit is expected to be installed by United Energy by February 2020. United Energy partnered with four energy retailers to develop retail use cases (such as energy arbitrage and frequency control auxiliary services) to enhance the market benefits that could be derived from the BESS units.

United Energy claimed DMIA expenditure of \$384,168 in 2019.

⁹ United Energy, *Demand Management innovation Allowance Report – 2019*, 19 February 2020.

9.1.2. Assessment against DMIA criteria

Criteria #1 The project aims at reducing the peak demand on United Energy's network by charging the battery during low demand periods when solar PV generation is at its maximum and discharging the battery when demand on the United Energy network is at its maximum. The project is an extension to United Energy's virtual power plant (VPP) project.

Criteria #2 This is a peak demand management project aimed at certain locations in United Energy's network.

Criteria #3 The project involves a pole-top BESS solution which is a relatively new technology. According to United Energy, the proposed pilot project would be the first pole-top BESS solution in Australia.

Criteria #4 The project is non-tariff based.

Criteria #5 United Energy stated that the DMIA expenditure for this project is not being recovered through any other jurisdictional, state or Australian Government scheme, nor through any other part of the distribution determination for the current regulatory control period.

United Energy stated that the costs of \$384,168 recovered under the DMIA in 2019 include costs incurred in procuring consulting services and equipment in 2019. This amount is 82.5 per cent of total project costs in 2019, with the balance covered by United Energy's capital expenditure (capex) budget.

Criteria #6 Expenditure is in the nature of capex.

Closing Project

9.2. Virtual power plant stage 1

9.2.1. Project overview

With the falling prices of solar photovoltaic (PV) panels and battery storage systems, United Energy wanted to explore the use of PV and battery storage technology for addressing immediate capacity shortfalls, deferring traditional network augmentation solutions, and addressing the voltage issues on United Energy's network. By utilising the energy stored in batteries, United Energy can use VPP technology to shave peak load and defer augmentation projects in regions of the network where the future peak demand growth is uncertain and where the cost of adding capacity through traditional solutions is higher than average.

In 2018 United Energy wound down the pilot project to complete the transition of the pilot to business-as-usual, decommission the remaining VPP units, and re-deploying them as part of a new grid-side storage trial at United Energy's constrained distribution substations.

United Energy claimed DMIA expenditure in 2019 of \$654 for this project. The costs were for the ongoing operational and decommissioning expenses associated with the pilot (such as sim cards to enable remote control and continuous live monitoring of the systems by United Energy and software maintenance).

9.2.2. Assessment against DMIA criteria

Criteria #1 The project attempts to combine the capabilities of solar PV generation and battery storage to flatten out the demand profile by charging the battery overnight from the network or from PV during the middle of the day when solar PV generation is at its maximum, and discharging the battery during the early evening when energy demand requirements on the United Energy network are at their maximum. Aggregating VPP units will provide a system that can be dispatched to manage network capacity constraints.

Criteria #2 This is a peak demand management project.

Criteria #3 The project offers a new solution for a constrained network area, particularly where load growth is low or uncertain. The ability to provide incremental amounts of capacity through combining renewable generation and storage to meet the demand as it materialises could be more efficient than a traditional network solution that provides significant step increases in capacity at higher cost.

Criteria #4 The project is non-tariff based.

Criteria #5 United Energy stated that the DMIA expenditure for this project is not being recovered through any other jurisdictional, state or Australian Government scheme, nor through any other part of the distribution determination for the current regulatory control period.

United Energy stated that the costs recovered under the DMIA include costs incurred in procuring consulting services, equipment and installation services, but exclude United Energy employees' labour costs allocated to the project.

Criteria #6 Expenditure is in the nature of opex.