
Demand Management Incentive Scheme Report - 2014



DMIS Report

This report details outcomes of projects supported by the Demand Management Incentive Scheme.

TABLE OF CONTENTS

1	Introduction	2
1.1	District Energy Services Scheme (DESS) Project	2
1.2	Virtual Power Plant (VPP) Project	3
1.3	Summer Saver (Demand Response) Trial	3
2	Regulatory Requirement and Compliance	4
2.1	DESS Project	4
2.2	VPP Project	5
2.3	Summer Saver Trial	6
2.4	DMIS Reporting	9
2.4.1	DESS Project	9
2.4.2	VPP Project	12
2.4.3	Summer Saver Project	14
3	Attachments	17
3.1	Appendix 1 - DESS Project	17
3.1.1	Cofely Newsletter	17
3.1.2	United Energy / Manningham City Council MoU (5 year extension)	17
3.1.3	Program Plan for Stages 2 and 3	17
3.2	Appendix 2 – VPP Pilot Project Stage 1	17
3.2.1	VPP 2014 Report	17
3.3	Appendix 3 - Summer Saver Project	17
3.3.1	Customer Letter	17
3.3.2	Customer Registration	17
3.3.3	Frequently Asked Questions	17
3.3.4	Promotional Flyer	17
3.3.5	Terms and Conditions	17
3.3.6	UE Website Content	17

1 Introduction

During the 2014 calendar year, United Energy (UE) undertook three projects under the Demand Management Incentive Scheme (DMIS). These were:

- District Energy Services Scheme (DESS) Project;
- Virtual Power Plant (VPP) Project; and
- Summer Saver (Demand Response) Trial.

This report and its attachments deliver the annual reporting requirements of the DMIS for work undertaken on these projects during 2014 and documents the outcomes and learnings of each project. Further details of each project are presented below.

1.1 District Energy Services Scheme (DESS) Project

In August 2011, UE was delighted to formalise a Memorandum of Understanding (MoU) with Manningham City Council to work with the Council in providing support for jointly planned initiatives within the Doncaster Hill Smart Energy Zone¹. Over the time, the MoU has allowed UE to provide its expertise in electricity distribution to assist the Council to explore and facilitate projects which promote sustainable energy development and demand management opportunities within the precinct. UE is supportive of and is actively engaged with the Council in its District Energy Services Scheme (DESS) project, predominantly through in-kind labour support, but also in cash support through the Demand Management Incentive Scheme Allowance (DMIA) in instances when external consulting resources were required for the development of the project. The MoU expired in 2014 and as such UE and Council have renewed the MoU for another five year term.

While the aim of the DESS project is to ultimately establish a working, commercially feasible DESS in the Doncaster Hill Smart Energy Zone to potentially defer network augmentation, the DMIA has been an essential funding source to enable the Council and UE to do the upfront work necessary to prove the concept and announce the preferred provider. Working with two qualified expert service providers to explore and establish the foundations for a suitable commercially viable model within the existing regulatory framework, has been a valuable step in the process. If proven successful, this model could form the benchmark for opportunities to develop similar schemes elsewhere around Australia.

UE has some emerging constraints within the Doncaster electricity distribution network and the convergence of these constraints with the implementation of a DESS project within the Doncaster Hill area could allow the non-network solution to defer planned network augmentations by reducing peak demand. Key to the success of achieving this objective was the development of a commercial model with two expert DESS companies identified through the Expression of Interest (EOI) and Request for Quotation (RFQ) process conducted during 2012. UE and Council shortlisted two providers, namely COFELY Australia and MSEZ Consortium from the process and both organisations have since developed comprehensive proposals that were reviewed by an independent third party AECOM during 2013.

Following the detailed review, on 13th August 2013 Council announced COFELY Australia (a subsidiary of the multinational utility company GDF SUEZ) as the preferred provider for a DESS for the Doncaster Hill Principal Activities Area. The announcement follows two years of work by Council and UE, investigating the possibility of bringing 21st century energy services to Doncaster Hill. It is unlikely that this project would have achieved this major milestone without the support of the DMIA and the close cooperation of all involved.

With COFELY Australia as the preferred provider for a DESS for Doncaster Hill, a program plan has been developed during 2014 to plan for the design and construction of the scheme. Already an MoU has been

¹ <http://www.doncasterhill.com/donhilloverview/sustainability/smart-energy-zone>

signed between Council and COFELY Australia to activate the first stage of the scheme being the optimisation of the Council's tri-generation plant.

Refer to Appendix 1 for further details on this project.

1.2 Virtual Power Plant (VPP) Project

In September 2013 UE submitted a request to the AER to seek indicative up-front approval to use part of the 2011-2015 allocation of Demand Management Incentive Scheme (DMIS) funding (part A) to support the development of UE's Virtual Power Plant (VPP) 50kW Residential Pilot Project.

With the price of solar photovoltaic (PV) falling dramatically and the price of battery storage forecast to decrease sharply in future years, UE was eager to explore the use of PV and battery storage technology for addressing immediate capacity shortfalls and deferring traditional network augmentation solutions on the UE network. By utilising the energy stored in batteries, VPP technology can be used by UE to shave peak load and defer augmentation projects in regions of the network where the future peak demand growth is uncertain or where peak demand is forecast to decline (potentially leading to under-utilised network assets). VPP can also be used to add capacity in regions of the network where the cost of adding capacity through traditional solutions is higher than average.

The aim of the project is to validate or otherwise, the use of a VPP to manage embedded generation and storage in a residential setting for the provision of efficient and prudent non-network augmentation.

The VPP integrates the operation of both supply and demand-side assets to meet customer demand for energy services in both the short and long-term. To match short-interval load fluctuations, the VPP is intended to make extensive and sophisticated use of information technology, advanced metering, automated control capabilities, and electricity storage. The VPP concept also treats long-term load reduction achieved through energy efficiency investments, distributed generation, and verified demand response on an equal footing with supply expansion. Thus, this approach extends the boundary of utility capacity investments through the meter, with its expanding communication and control capabilities, all the way to customer-side equipment.

In 2014 there was significant work completed as part of the stage 1 pilot. UE has now successfully installed a total of thirteen VPP units on their network. This installation was completed in July 2014, and significant testing, refinement and learnings have been established through the operations of these units.

The VPP project costs are predominantly made up of one-off setup costs, including the procurement and installation of equipment, risk assessments and equipment certification and testing. Additional contingency costs have also been allocated to allow for all the hardware to be removed at the end of the pilot and the premises returned to pre-trial condition should it be required.

Ongoing operations and lessons learned across each of the phases will be used going forward on the continuing VPP demand management projects.

Refer to Appendix 2 for further details on this project.

1.3 Summer Saver (Demand Response) Trial

Demand response seeks to incentivise the end customer to reduce their demand on a small number of peak demand days through a variety of mechanisms. These mechanisms include voluntary load reduction, utility load control, supply capacity limiting and dynamic peak pricing. Sustained reliable demand response from residential and commercial/industrial customers has been proven to be effective and efficient at managing peak demand and deferring network augmentation.

The Summer Saver Trial² is an investigation of how effective and efficient customer demand response is as a non-network alternative at addressing demand at peak times. The trial investigates demand management options. The outcomes of this trial will enable UE to develop a demand management model that describes the best combination of mechanisms that will result in the biggest peak demand reduction at specific locations based on customer demographics and load profiles.

UE launched the trial in February 2014 targeting 6,500 customers on four Bulleen zone substation feeders. Customers were offered \$25 if they reduced their load during the UE nominated three hour event period. UE anticipated calling on average four events per summer with the customer having the opportunity to earn \$100 for the summer if they participated in all events.

UE expanded the trial this summer to include 4,000 more customers in areas of the network that are likely to experience an interruption. Also, trial introduced new demand management options to existing trial members: direct load control of pool pumps and supply capacity limiting.

The majority of the costs incurred by the trial so far have been in marketing and raising awareness of the trial. Other costs include participation incentives and technology.

Refer to Appendix 3 for further details on this project.

2 Regulatory Requirement and Compliance

The AER, in its Demand Management Incentive Scheme applied to UE for the 2011-2015 regulatory period, sets certain criteria and reporting requirements for expenditure from the DMIA. These are detailed below along with a description of how UE complies with each of these requirements for each project.

2.1 DESS Project

"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."

One of the objectives of the District Energy Service Scheme is to defer the proposed network augmentation of establishing Templestowe Zone Substation (or Doncaster 4th transformer), currently detailed in UE's 2014 Distribution Annual Planning Report³. Solutions provided by COFELY Australia in its commercial feasibility report included opportunities to shift or reduce demand as an alternative to network augmentation.

"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 on 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."

The DESS aims to address specific network constraints by reducing demand on the network at the location and time of the constraint. UE's Doncaster Zone Substation supplies much of this developing area around Doncaster Hill. According to UE's Distribution Annual Planning Report 2014, Doncaster Zone Substation is

² <http://uemg.com.au/customers/your-electricity/summer-saver-trial.aspx>

³ <http://uemg.com.au/about-us/regulatory-framework/electricity-regulation/network-planning-reports.aspx>

fully developed with three 20/27MVA 66/22kV transformers and supplies the areas of Doncaster, Doncaster East, Box Hill North and Templestowe including the Box Hill Central, Doncaster Hill and The Pines precincts. The maximum summer demand of the substation is already above its (N-1) rating, and the maximum demand is expected to continue to increase by at least 1MW per annum for the foreseeable future. With major commercial and high density residential developments occurring in the Doncaster Hill area, there is a need by 2020 to build a new 66/22kV 20/33MVA zone substation in Templestowe to offload the Doncaster zone substation (or to augment Doncaster Zone Substation with a 4th transformer) thereby providing additional capacity for the Doncaster Hill area. The report identifies that the DESS should help to defer the need for network augmentation beyond this time.

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

The COFELY Australia commercial feasibility report identifies commercially viable demand management opportunities within the precinct which can be developed within the existing regulatory and planning frameworks.

“4. Recoverable projects and programs may be tariff or non-tariff based.”

The DESS project is non-tariff based.

“5. Costs recovered under the DMIS:

(a) must not be recoverable under any other jurisdictional incentive scheme

(b) must not be recoverable under any other Commonwealth or State/Territory Government scheme and

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

Costs recovered under the DMIS for the DESS project are costs incurred by UE in procuring expert consulting services. These costs have not been recovered from any other scheme. The costs do not include labour for UE and Council employees' time toward this project. This cost is absorbed by each organisation and is regarded as in-kind contribution towards the project.

“6. Expenditure under the DMIA can be in the nature of capital or operating expenditure. The AER considers that capex payments made under the DMIA could be treated as capital contributions under clause 6.21.1 of the NER and therefore not rolled into the regulatory asset base (RAB) at the start of the next regulatory control period. However the AER's decision in that regard will only be made as part of the next distribution determination.”

All costs incurred by UE under the DMIS for the DESS project are classified as operating expenditure.

2.2 VPP Project

“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.”

The VPP project attempts to combine the capabilities of solar PV generation and battery storage to flatten out the demand profile by charging the battery during the middle of the day when solar PV generation is at its maximum and discharging the battery during the early evening when residential demand is at its maximum. Aggregating VPP units will provide a system that can be dispatched to manage network capacity constraints.

"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 on 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."

The VPP aims to address specific network constraints by reducing demand on the network at the location and time of the constraint. If the VPP concept is proven, it is intended to locate such units in areas where there are identified network constraints. In the first instance, this is likely to be in areas where there are significant distribution transformer constraints by clustering the VPP units in localised areas. Ultimately the goal is to alleviate constraints higher up in the network such as at the distribution feeder or zone substation level.

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

The VPP offers a new solution for a constrained network area, particularly where load growth is low, uncertain or is expected to plateau in future. The ability to provide incremental amounts of capacity through combining renewable generation and storage to meet the demand as it materialises could be economic against a more traditional network solution that provides significant step increases in capacity at higher cost. The VPP is intended to test this concept.

"4. Recoverable projects and programs may be tariff or non-tariff based."

The VPP project is non-tariff based.

"5. Costs recovered under the DMIS:

(a) must not be recoverable under any other jurisdictional incentive scheme

(b) must not be recoverable under any other Commonwealth or State/Territory Government scheme and

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

Costs recovered under the DMIS for the VPP project are costs incurred by UE in procuring expert consulting services, equipment and installation services for the trial. These costs have not been recovered from any other scheme. The costs do not include labour for UE employees' time toward this project. This cost is absorbed by the organisation and is regarded as in-kind contribution towards the project.

"6. Expenditure under the DMIA can be in the nature of capital or operating expenditure. The AER considers that capex payments made under the DMIA could be treated as capital contributions under clause 6.21.1 of the NER and therefore not rolled into the regulatory asset base (RAB) at the start of the next regulatory control period. However the AER's decision in that regard will only be made as part of the next distribution determination."

All costs incurred by UE under the DMIS for the VPP project are classified as operating expenditure.

2.3 Summer Saver Trial

"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."

The Summer Saver Trial seeks to incentivise customers to reduce their load during peak times. Customers are rewarded \$25 per event for reducing their load during the UE nominated three hour event period.

Due to the late launch only 31 customers participated in the pilot, however reductions in customer load was still observed from this sample. The first event day occurred on Friday 7th February, that reached a top temperature of 37°C and saw, on average, a 30% reduction on energy consumption during the event period against their previous behaviour on a like day. The second event day, on Tuesday 11th March, was forecast to be 34+° but only reached 30°C yet an average reduction of 45% was observed compared to a like day.

It is expected that with larger numbers recruited this summer, a bigger load reduction will be seen.

"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 on 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."

The Summer Saver Trial seeks to address specific network constraints and is therefore targeted at customers directly impacted by those constraints. The trial targets approximately 6,500 customers on four Bulleen feeders that were close to capacity as well as about 4,000 customers in areas of the network which are likely to suffer an interruption this summer. Through the trial, UE wishes to understand if sufficient numbers of customers participate in the trial and reduce sufficient load to prevent an interruption.

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

Demand management as a concept is not new however trialling it in a metropolitan area in Melbourne certainly is. Other DNSPs in Australia and internationally have found success with demand management in regional areas where communities display more social capital. Since UE's network is predominantly metropolitan, demand management such as demonstrated by this trial is a crucial option to be explored.

"4. Recoverable projects and programs may be tariff or non-tariff based."

The Summer Saver Trial is non-tariff based.

"5. Costs recovered under the DMIS:

(a) must not be recoverable under any other jurisdictional incentive scheme

(b) must not be recoverable under any other Commonwealth or State/Territory Government scheme and

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

Costs recovered under the DMIS for the Summer Saver project are costs incurred by UE in marketing the trial, participation incentives and procuring technology. These costs have not been recovered from any other scheme. The costs do not include labour for UE employees' time toward this project. This cost is absorbed by the organisation and is regarded as in-kind contribution towards the project.

“6. Expenditure under the DMIA can be in the nature of capital or operating expenditure. The AER considers that capex payments made under the DMIA could be treated as capital contributions under clause 6.21.1 of the NER and therefore not rolled into the regulatory asset base (RAB) at the start of the next regulatory control period. However the AER’s decision in that regard will only be made as part of the next distribution determination.”

All costs incurred by UE under the DMIS for the Summer Saver Trial are classified as operating expenditure.

2.4 DMIS Reporting

The information contained in this report and its attachment appendices is suitable for public publication.

The AER requires that a DNSP's annual report must include the following for each project.

2.4.1 DESS Project

1. The total amount of the DMIA spent in the previous regulatory year, and how this amount has been calculated.

UE had \$12,975 excl. GST of expenses during 2014 calendar year on activities associated with the DMIA for the DESS project comprising of:

- \$12,975 excl. GST for costs associated with engaging Roberts Consulting for the DESS Stages 2 and 3 program plan. Roberts Consulting was involved in the program planning for Stage 1 of the project.

2. An explanation of each demand management project or program for which approval is sought, demonstrating compliance against the DMIA criteria in section 3.1.3 with reference to:

(a) the nature and scope of each demand management project or program

The DESS project involves formulating a suitable model for establishing a commercially viable DESS in the Doncaster Hill Smart Energy Zone area. Council and UE did not want to be prescriptive of the type of technology or solution to be implemented for the Doncaster Hill DESS, rather to have a commercially viable solution that could be established within the existing regulatory framework and meet Council's objective of reduced greenhouse gas emissions and UE's objective for network augmentation deferral through non-network solutions. The project design is such that much of the technical detail has relied largely on the specific technical and commercial expertise of the entities that were invited to respond to the RFQ and subsequently the two entities that provided the detailed study reports. The preferred provider announced by Council in 2013 offered a model that maximises the objectives of Council and UE including the ability to defer network augmentation.

(b) the aims and expectations of each demand management project or program

The Doncaster Hill Strategy was adopted by the Council in 2002 and outlined the Council's vision for a vibrant, high density and sustainable growth area for Manningham and was enacted in the Doncaster Hill Planning scheme. It is important to clarify that the Council sees its role in delivering the DESS project as being an "active facilitator" with the aim of identifying a solution that achieves the commercial objectives of developers and the planning and environmental aspirations of the Manningham community.

UE envisages a similar facilitation role for development of private and local energy grid infrastructure. However larger scale network planning has identified augmentation requirements which are likely to be able to be deferred from the range of energy management options identified by the project.

(c) the process by which each project or program was selected, including the business case for the project and consideration of any alternatives

The quest to identify a commercially feasible district based solution to address the energy needs of Doncaster Hill commenced through an Expression of Interest (EOI) process. The EOI closed on 23rd November 2011 and a number of responses were received including responses from:

- AG Coombs;
- Cogent / Origin Energy;
- Dalkia;
- GDF Suez (COFELY Australia); and

- Total Energy Solutions / Aurora Energy / Transfield Services (MSEZ consortium).

A project steering committee was established comprising of Council and UE representatives to assess the submissions. Through a formalised selection process, two respondents were invited to undertake a more detailed feasibility study through a Request for Quotation (RFQ) process, these being:

- GDF Suez (COFELY Australia); and
- Total Energy Solutions / Aurora Energy / Transfield Services (MSEZ consortium).

A DMIA budget allocation was used to contribute toward the feasibility work and this was shared equally between the two successful RFQ respondents. In responding to the EOI all respondents were made aware that there would be some requirement to invest their own resources on a venture basis to complement the DMIA funding stream. Therefore the DMIA funding did not cover the full costs incurred by the two successful providers.

In 2013, Council and UE engaged AECOM to undertake a verification review of the two study reports provided by the two study providers. The study reports were assessed on their ability to maximise the strategic objectives for the project. Based on the results of the verification review, Council announced publicly on 13th August 2013 the preferred provider of the DESS for Doncaster Hill, being COFELY Australia.

During 2014, UE and Council engaged Roberts Consulting to develop a program plan for Stages 2 and 3 of the project. These stages involve securing anchor clients for the DESS, and facilitating the design and construction for the DESS.

(d) how each project or program was/is to be implemented

The DESS project is being implemented in a number of stages.

The initial stage was the establishment of a MoU between UE and Council. This was completed in August 2011 with an official signing ceremony at Council's August meeting, with speeches by UE and Council CEOs. The MoU expired in 2014 and was subsequently extended for another five years. For a copy of the renewed MoU, refer to Appendix 1.

In November 2011, Council in consultation with UE issued an EOI to the market to request suitably qualified district energy service providers to register their interest for undertaking a study to identify a technically and commercially viable model for a DESS solution specific for Doncaster Hill.

The next stage was the securing of funding through the DMIA with the UE application sent to the AER in January 2012, with an associated letter of support from Council. In March 2012, the AER responded to UE, endorsing the application.

In April 2012, Council in consultation with UE, issued an RFQ to the two shortlisted providers from the EOI process (COFELY Australia and MSEZ Consortium) to request offers for services to develop a DESS study to identify a technically and commercially viable model for a DESS solution specific for Doncaster Hill.

In July 2012 with the high quality of both proposals submitted, Council and UE decided to engage both service providers to independently undertake the commercial feasibility study, to maximise the opportunity for at least one proposed solution to be commercially viable. A developers' breakfast information session was held in July 2012 which was open by invitation to all building developers in Doncaster Hill, an important stakeholder group needed to be consulted for project viability. This session provided the opportunity for the two service providers to introduce themselves and start the consultation and negotiation process necessary to develop a commercially viable solution.

In August 2012, Roberts Evaluation consulting firm was engaged to establish the planning and evaluation framework for this project with a workshop held and a Project Monitoring and Evaluation plan developed. This plan is a living document and will be updated quarterly throughout the course of the project.

In October 2012, the two service providers presented their findings of their draft reports to Council and UE. Reports were finalised thereafter. The COFELY Australia DESS study report and the MSEZ DESS study report were included in the 2012 DMIS Report. Both reports proposed commercially viable solutions that go some way to providing network augmentation deferral.

UE in consultation with Council (and with the endorsement of the two service providers), engaged AECOM to undertake an independent verification of the two study reports. This work was completed in April 2013 with a verification report prepared for each of the two study providers.

Also in 2013 UE began to negotiate terms and conditions for a future network support agreement with the providers that will be used for developing network support services for a non-network solution to defer the planned network augmentation. The study reports together with the developed draft agreements will be assessed as non-network solutions for the Doncaster/Templestowe Supply Area Regulatory Investment Test for Distribution (RIT-D) process expected during 2016.

In August 2013, Council publically announced its preferred provider for the precinct being COFELY Australia with a media release.

In 2014 Council and COFELY Australia signed an MoU to commence the optimisation of Council's tri-generation system, an important starting point for the DESS. Further Council and UE engaged Roberts Consulting to develop the program plan for Stages 2 and 3 of the DESS which involve securing anchor clients for the scheme and the detailed design and construction of the scheme.

(e) the implementation costs of the project or program and

In 2014, costs used from the DMIA were allocated to prepare a program plan for Stages 2 and 3 of the DESS.

(f) any identifiable benefits that have arisen from the project or program, including any off peak or peak demand reductions.

To date, two commercial feasibility studies have been completed and a preferred provider for the DESS announced by Council. A program plan for the establishment of the DESS has also been completed.

3. The costs of each demand management project or program:

(a) are not recoverable under any other jurisdictional incentive scheme,

(b) are not recoverable under any other state or Commonwealth government scheme, and

(c) are not included in the forecast capital or operating expenditure approved in the AER's distribution determination for the regulatory control period under which the DMIS applies, or under any other incentive scheme in that determination.

- Expenditure under the demand management incentive scheme is not eligible for recovery under any other jurisdictional incentive scheme
- Expenditure under the demand management incentive scheme is not eligible for recovery under any other state or Commonwealth government scheme
- Expenditure under the demand management incentive scheme has not been approved in the AER's distribution determination for the regulatory control period under which the scheme applies, or under any other incentive scheme in that determination.

4. An overview of developments in relation to projects or programs completed in previous years of the regulatory control period, and of any results to date.

Not applicable.

2.4.2 VPP Project

1. The total amount of the DMIA spent in the previous regulatory year, and how this amount has been calculated.

UE had \$850,672 excl. GST of expenses during the 2014 calendar year on activities associated with the DMIA for the VPP project. The costs were associated with engaging external consultants for the one-off planning of the VPP project and procurement, installation and testing of the associated equipment for the trial. These costs can be categorised as follows:

- \$293,482 excl. GST for the pre-implementation study including work on predictive, economic and business modelling before commencing the pilot program.
- \$580,358 excl. GST for the supply, installation and operation of VPP Units. This cost includes procurement costs (such as legal fees for development of the contract and engaging external consultants for the planning of the VPP project), installation costs (including completing factory acceptance testing of equipment before installation, the install of the equipment and audit of the installation by a licenced electrical inspector for compliance to standards) and ongoing operational expenses associated with the pilot (such as sim cards to enable remote control and continuous live monitoring of the systems by UE);
- \$49,000 excl. GST for risk assessment of VPP systems, installations and operations;
- \$138,400 excl. GST for laboratory testing of VPP units under various climatic conditions that are likely to be experienced on the UE network;
- of which \$210,568 excl. GST of expenses incurred in early 2014 that were reported in the 2013 DMIS report have been deducted from the total reported this year.

Further costs associated with the VPP pilot project are likely to be incurred by UE in the 2015 calendar year. The costs incurred in the Stage 1 pilot are currently being used to assess the financial feasibility of implementing future VPP projects at scale.

2. An explanation of each demand management project or program for which approval is sought, demonstrating compliance against the DMIA criteria in section 3.1.3 with reference to:

(a) the nature and scope of each demand management project or program

A VPP can be defined as a cluster of grid-connected distributed generation and storage plants that are monitored and controlled by an operator for energy trading and grid benefits. When combined, the cluster can then be treated as a single power plant. For UE's VPP project we intend to use solar PV and battery storage technologies which when combined can act to reduce peak electricity demand.

(b) the aims and expectations of each demand management project or program

The aim of stage 1 of the project is to test the VPP concept and its ability to control peak demand through the dispatch of battery storage optimised against solar PV generation.

Traditional network solutions usually result in sunk capital; the resulting augmented asset cannot be easily recovered and used elsewhere if future demand falls. This project's aim is to validate or otherwise, the use of a VPP to manage embedded generation and storage in a residential setting for the provision of efficient and prudent network augmentation. The solution will be validated if it:

- Effectively avoids/defers CAPEX/OPEX requirements in a prudent and efficient manner.
- Is the most economic outcome when actual costs and benefits are known.
- Is a technically appropriate solution with appropriate mitigation of any risks.

The objectives of this project are to validate VPP as a suitable approach for managing augmentation on the UE distribution network with no adverse impacts to network reliability and safety. The VPP project aims are:

- To test the current state of the technology and its ability to scale.
- To identify the risks.
- To test and assess the level of control that can be achieved with commercially available devices currently on the market.
- To develop an understanding of the economics of the solution and validate the solution is a viable load management tool by exploring and then testing the business model(s), taking the generation, retail and distribution aspects into consideration.
- To explore and test the contractual and commercial agreements with 3rd parties and Residential Hosts (customers).

(c) the process by which each project or program was selected, including the business case for the project and consideration of any alternatives

This project proposes VPP as a solution to address peak demand issues in low voltage feeders when augmentation costs using traditional solutions are high. It is anticipated that in the future, distributed generation and storage will have application for the entire network as costs continue to fall.

(d) how each project or program was/is to be implemented

The overall VPP project has been broken into three key stages to ensure that appropriate governance over costs, risks and benefits and associated gating and review are applied at each stage, with each stage being subject to independent approval. Stage 1 (present stage) consists of a VPP system comprising between eight and fourteen installations at residential sites totalling 50kW. The installation sites will be limited to UE employees and VPP project team members' premises within the UE distribution area to manage identified risks. Stage 1 will be operated over a period of 12 to 15 months to test the economics and commercial models and understand the technology's capabilities, limitations and suitability for larger scale deployment. This stage will provide a full year of energy flow data through seasonal variations.

(e) the implementation costs of the project or program and

In September 2013 UE submitted a request to the AER to seek indicative up-front approval to use part of the 2011-2014 allocation of Demand Management Incentive Scheme (DMIS) funding (part A) to support the development of UE's Virtual Power Plant (VPP) 50kW Residential Pilot Project. This was endorsed by the AER on the 2nd October 2013. The overall VPP project stage 1 is estimated to cost \$1.75M.

(f) any identifiable benefits that have arisen from the project or program, including any off peak or peak demand reductions.

Given the early stages of the project, to date no peak demand reductions have been achieved.

3. The costs of each demand management project or program:

(a) are not recoverable under any other jurisdictional incentive scheme,

(b) are not recoverable under any other state or Commonwealth government scheme, and

(c) are not included in the forecast capital or operating expenditure approved in the AER's distribution determination for the regulatory control period under which the DMIS applies, or under any other incentive scheme in that determination.

- Expenditure under the demand management incentive scheme is not eligible for recovery under any other jurisdictional incentive scheme

- Expenditure under the demand management incentive scheme is not eligible for recovery under any other state or Commonwealth government scheme
- Expenditure under the demand management incentive scheme has not been approved in the AER's distribution determination for the regulatory control period under which the scheme applies, or under any other incentive scheme in that determination.

4. An overview of developments in relation to projects or programs completed in previous years of the regulatory control period, and of any results to date.

Not applicable.

2.4.3 Summer Saver Project

1. The total amount of the DMIA spent in the previous regulatory year, and how this amount has been calculated.

UE had \$51,470 excl. GST of expenses during the 2014 calendar year on activities associated with the DMIA for the Summer Saver Trial comprising of the following:

- \$51,470 excl. GST for costs associated with marketing the summer saver trial, paying participation incentives and conducting market research.

2. An explanation of each demand management project or program for which approval is sought, demonstrating compliance against the DMIA criteria in section 3.1.3 with reference to:

(a) the nature and scope of each demand management project or program

This Summer Saver Trial is an investigation of how effective and efficient customer demand response is as a non-network alternative at addressing demand at peak times.

Different mechanisms of demand response can be utilised to motivate and/or incentivise customers to change their energy usage behaviour and reduce load during peak times. These include:

- Voluntary Demand Side Participation (DSP): incentivises customers to reduce/shift their load during peak times with a single-rate reward paid to those who reduce usage by any amount.
 - Rebate per kW reduced: motivates a greater reduction in load during peak times as the rebate is dependent on how much load is reduced – the more load reduced the greater the rebate.
- Direct Load Control: gives the utility more certainty in managing load by allowing the utility to manage appliances (RCAC and/or pool pump) during peak times to a known and predictable maximum.
- Critical Peak Pricing: electricity is priced significantly more during peak times to induce customers to reduce load and save money on their bill.
- Supply Capacity Limiting: sets a limit on the customers supply during peak times. This mechanism targets high users by enforcing a reasonable limit on their supply during peak times. Signing up to this option is voluntary and it is envisioned that such customers are genuinely keen to save energy and be more comparable to their neighbours.

(b) the aims and expectations of each demand management project or program

The key objectives of this trial are to investigate and assess the benefit provided to the network through:

- demand management tools:
 - investigate the take-up and impact of the three demand management mechanisms on customer load at peak times

- incentivise customers to reduce their load during peak times via one or more demand management tool
- Informing and empowering the consumer:
 - provide consumers with the tools and information they need to take an active role in managing their consumption and to reduce energy costs and environmental impact

To this end, the trial intends to:

- investigate the take up of the different demand management mechanisms and their
- attractiveness/value to the customers managing/reducing their load
- attractiveness/value to UE in managing peak load
- investigate the value of the different demand management mechanisms compared with network solutions
- identify risks with the technology in installation and operation
- develop UE knowledge and capability in leveraging AMI benefits
- develop relationships with UE customers
- explore and test contractual and commercial agreements with 3rd parties (retailers, contractors, suppliers)

The outcomes of this trial will enable UE to develop a demand management model that describes the best combination of mechanisms that will result in the biggest peak demand reduction at specific locations based on customer demographics and load profiles.

This model will then be incorporated into business-as-usual activities to manage peak demand.

(c) the process by which each project or program was selected, including the business case for the project and consideration of any alternatives

Approximately 85% of UE's network services residential customers. This trial investigates various demand management options that can be employed by residential customers. The results of this trial will help UE define which demand management mechanisms have the biggest customer take-up and participation and yield the biggest load reductions at a given incentive value.

(d) how each project or program was/is to be implemented

UE undertakes analysis to identify trial areas that are likely to experience an interruption and could benefit from load reduction through demand management. Customers in these areas are sent letters informing them of the trial with a call for action to register via the UE website.

UE accepts registrations from customers within the trial area who have either a mobile phone or email account to receive UE event alerts.

UE sends SMS and/or email alerts to customers:

- 48 hours notification of an event day
- 24 hour notice of the event period
- And a reminder on the morning of the event day.

Following the event, UE analyses customer smart meter data to verify load reduction during the three hour event period. Successful customers are informed via email that they will be rewarded. Rewards are processed and sent within two weeks following an event.

UE undertakes further analysis of customer data to evaluate individual customer and total load reduction achieved for the event.

(e) the implementation costs of the project or program and

In 2014 the DMIA costs were spent on marketing activities that included:

- Letters mailed to customers
- Flyers dropped in letter boxes
- Advertisements in local newspapers.

Funds were also spent on market research of customers within the trial area to understand the best channels to inform customers of the trial and motivations for signing up (or not) to the trial. Research was conducted on trial members to learn about their experience on the trial and find ways of improving the trial.

(f) any identifiable benefits that have arisen from the project or program, including any off peak or peak demand reductions.

UE called two event days last summer.

The first event day occurred on Friday 7th February that reached a top temperature of 37°C and saw on average 30% reduction on energy consumption during the event period against the customer's previous behaviour on a like day.

The second event day, on Tuesday 11th March, was forecast to be 34+° but only reached 30°C yet an average reduction of 45% was observed compared to a like day.

3. The costs of each demand management project or program:

(a) are not recoverable under any other jurisdictional incentive scheme,

(b) are not recoverable under any other state or Commonwealth government scheme, and

(c) are not included in the forecast capital or operating expenditure approved in the AER's distribution determination for the regulatory control period under which the DMIS applies, or under any other incentive scheme in that determination.

- Expenditure under the demand management incentive scheme is not eligible for recovery under any other jurisdictional incentive scheme
- Expenditure under the demand management incentive scheme is not eligible for recovery under any other state or Commonwealth government scheme
- Expenditure under the demand management incentive scheme has not been approved in the AER's distribution determination for the regulatory control period under which the scheme applies, or under any other incentive scheme in that determination.

4. An overview of developments in relation to projects or programs completed in previous years of the regulatory control period, and of any results to date.

Not applicable..

3 Attachments

3.1 Appendix 1 - DESS Project

3.1.1 Cofely Newsletter

3.1.2 United Energy / Manningham City Council MoU (5 year extension)

3.1.3 Program Plan for Stages 2 and 3

3.2 Appendix 2 – VPP Pilot Project Stage 1

3.2.1 VPP 2014 Report

3.3 Appendix 3 - Summer Saver Project

3.3.1 Customer Letter

3.3.2 Customer Registration

3.3.3 Frequently Asked Questions

3.3.4 Promotional Flyer

3.3.5 Terms and Conditions

3.3.6 UE Website Content