Demand Management Innovation Allowance Submission

2011-2012 Report to the AER

August 2012

Demand Management Innovation Allowance Submission

August 2012

Contents

1 Introduction

This submission has been prepared under the Demand Management Innovation Allowance (DMIA) scheme applied to Ausgrid by the AER in the 2009 regulatory determination.

Under Section 3.1.4.1 of the AER's final determination for The Demand Management Incentive Scheme for the ACT & NSW 2009, Ausgrid is required to submit an annual report on expenditure under the DMIA for each regulatory year. The annual report must include:

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

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

    a. the nature and scope of each demand management project or program,

    b. the aims and expectations of each demand management project or program,

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

    d. how each project or program was/is to be implemented,

    e. the implementation costs of the project or program, and

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

3. A statement signed by a director of the DNSP certifying that the costs of the demand management 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 capex or opex approved in the AER's distribution determination for the next regulatory control period, or under any other incentive scheme in that determination (such as the D–factor scheme for NSW).

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

Accordingly, this submission details DMIA projects undertaken by Ausgrid in the 2011/12 financial year.

2 Summary of Submission

There were two (2) ongoing DMIA projects (approved in FY 2010/11) and four (4) new projects approved and under implementation for which we incurred costs or revenue forgone in 2011/12. Ausgrid's submission identifies claimable costs incurred totaling $661,335. All costs incurred were a part of operating expenditure (opex) budget.

Actual costs incurred are collected from project codes in Ausgrid's SAP reporting system. The amounts claimed are those booked to each project in the applicable year. Costs include implementation costs, project management and other directly related costs, but exclude costs related to development of projects prior to the approval to proceed.

The subsequent information in this submission is arranged by project. Details are provided addressing each of items 2 (a) - (f) from Section 3.1.4.1 of the AER's final determination for The Demand Management Incentive Scheme for the ACT & NSW 2009.

3 New Projects for Approval

3.1 CBD Embedded Generator Connection Trial

3.1.1 Project Nature & Scope

To develop and design a trial embedded generator connection in the Sydney CBD that addresses the potential fault level and feeder imbalance issues which are considered to be potential barriers to their widespread uptake in these types of network locations.

3.1.2 Project Objectives

The primary aim is to develop cost effective technical solutions to the two key connection issues of equipment fault level limitations and feeder imbalance for high voltage (11 kV) connections to the triplex distribution network.

3.1.3 Project Selection Process

Ausgrid has developed templates & guidelines for the preparation of project proposals for potential funding under the DMIA allowance.

When opportunities are identified for new projects, Ausgrid uses the following methodology when assessing projects for funding under the DMIA allowance:

1. A project proposal is prepared according to the Ausgrid DMIA template and guidelines, including additional criteria specified by Ausgrid (repeatability, suitability to geographically specific network constraints, and potential to be cost effective ($/kVA)).
2. The project proposal is reviewed by the Manager – Demand Management to ensure it meets the funding criteria specified under the DMIA Scheme.
3. Checks are also made to ensure that budget projects costs are within the DMIA allowance.

3.1.4 Implementation Plan

The Implementation Plan included two main components:

1. Consideration and analysis of the network design options to enable connection of generators at 11kV level while addressing the fault level and feeder imbalance issues, and identification of the preferred approach.
2. Detailed technical design of the preferred option.

An external consultant was engaged to provide the conceptual design for the preferred auto-switching scheme, detail the equipment required and provide an estimate of costs.

3.1.5 Results

The preferred design for the auto switching scheme comprised of three main features:

- Logic functions in a PLC within the distribution substation
- Control mode switches on the circuit breakers on the LV side of the distribution transformers at the distribution substation
- Integration of status and control signals from the Sydney CBD triplex network and embedded generation.

The conceptual design showed that an embedded generator can be connected in such a way that installation costs are minimized, yet with no adverse impacts on the network or customer reliability.

The estimated indicative cost for the system is $50,000, with an accuracy of ±40%. Although there are significant issues which would need to be resolved before the proposed solution could be implemented, the conceptual design and the costing provide an excellent basis for ongoing work.

3.1.6 Summary of Budget & Actual Costs

A summary of the project budget and actual cost incurred in 2011/12 are shown below. All costs incurred for this project are categorised as opex.

Project budget:

Budget Item	**FY 11/12**
Network options analysis	$25,000

Detailed technical design	$25,000
Total Budget (excl GST)	**$50,000**

Actual project costs 2011-12:

2011/12 Expenditure (excl GST)	**$39,251**

Project scheduled for completion in 2012/13.

3.1.7 Program Progress & Identifiable Benefits

At this stage there are no material peak demand reductions achieved from this program.

3.1.8 Recovery of Costs

In submitting this program for inclusion in the DMIA Scheme, Ausgrid confirms that the program costs:

- are not recoverable under any other jurisdictional incentive scheme
- are not recoverable under any other State or Commonwealth Government scheme
- are not included in the forecast capex or opex approved in the AER's distribution determination for the next regulatory control period, and
- are not eligible for recovery under the D-Factor Scheme.

3.2 Subsidised Off-peak Hot Water Connections

3.2.1 Project Nature & Scope

The Subsidised Off Peak Connection Program encourages customers to connect large electric hot water systems to off-peak electricity supply. The program includes market research, development of marketing materials, implementation of conversions and delivering a close-out report.

3.2.2 Project Objectives

To develop & demonstrate marketing approaches that will achieve high take-up rates of conversion of electric hot water systems from continuous supply to off peak electricity supply for the purposes of reducing peak demand in specific network locations. The program also has significant potential to reduce household energy bills.

3.2.3 Project Selection Process

Ausgrid has developed templates & guidelines for the preparation of project proposals for potential funding under the DMIA allowance.

When opportunities are identified for new projects, Ausgrid uses the following methodology when assessing projects for funding under the DMIA allowance:

1. A project proposal is prepared according to the Ausgrid DMIA template and guidelines, including additional criteria specified by Ausgrid (repeatability, suitability to geographically specific network constraints, and potential to be cost effective ($/kVA)).
2. The project proposal is reviewed by the Manager – Demand Management to ensure it meets the funding criteria specified under the DMIA Scheme.
3. Checks are also made to ensure that budget projects costs are within the DMIA allowance.

3.2.4 Implementation Plan

There are up to 100,000 large electric hot water systems in houses across Ausgrid's distribution area that are currently connected to continuous electricity supply but could potentially be connected to off peak supply. These systems include electric storage, solar and heat pump models which can contribute up to 600 watts to winter peak demand and 300 watts to summer peak demand each year.

The program includes two major phases of work:

1. Research to determine why large systems are not currently connected to controlled load and what barriers need to be overcome for customers to move them to off peak supply. This research was used to refine estimates of market size, marketing messages for customers, demand savings and determine take up rates for various price points.

2. Offer subsidised off peak connections for eligible households (customers with existing large electric hot water systems (over 100 litres) not connected to controlled load). For most customers, a flat fee (for example $199) was charged for this service, which included the meter and installation, wiring and documentation.

3.2.5 Results

The program commenced with market research in September 2011 to determine current customer perceptions and barriers to connecting to controlled load. This research was followed by customer offers.

A total of 2,400 customers across four areas of Sydney were sent letters from 17 May to 7 June offering them a flat fee of $199 to connect their hot water system to controlled load. 15 customers (0.6%) took up the offer. Follow-up phone calls were made to these customers from 19 -25 June resulting in an additional 50 customers taking up the offer (2.1%).

An additional 5,000 customers (1,250 from each trial area) were sent a more detailed direct mail piece with the same offer of a $199 flat connection fee on 20 June. This piece was designed by a creative agency to increase recognition of the offer and customer engagement. 20 customers (0.4%) took up the offer within a week of receiving it. Follow-up calls were made to 2,082 of these customers from 26 – 29 June resulting in an additional 62 customers taking up the offer (3.0%).

A further 5,000 customers (1,250 from each trial area) were sent the same $199 direct mail piece on 4 July and 10 customers have taken-up the offer to date (0.2%). These customers will not receive a follow-up call.

In the last phase of the trial, 2,400 customers will be sent a letter in the week commencing 30 July offering a discounted flat rate of $99 for connection to a controlled load supply/tariff.

3.2.6 Summary of Budget & Actual Costs

A summary of the project budget and actual cost incurred in 2011/12 are shown below. All costs incurred for this project are categorised as opex.

Given the potential demand management benefits for the whole electricity network, the project is in collaboration with Transgrid, the transmission network service provider for the Ausgrid network area. Ausgrid and Transgrid have agreed to a 50/50 split in program costs.

In 2011/12, total project costs totaled $91,007, of which $79,007 were assigned to Ausgrid.

Project budget:

	FY 11/12		
Budget Item	**Total**	**Transgrid**	**Ausgrid**
Phase 1 – Market Research	$24,000	$12,000	$12,000
Phase 2 - Implementation	$424,500	$212,250	$212,250
Total Budget (excl GST)	**$448,500**	**$224,250**	**$224,250**

Actual assigned project costs 2011-12:

2011/12 Expenditure (excl GST)	$91,007	$12,000	$79,007

Transgrid has been invoiced for phase 1 only to date. Transgrid's share of the phase 2 costs will be invoiced in 2012/13.

Project scheduled for completion in 2012/13.

3.2.7 Program Progress & Identifiable Benefits

At this stage there are no material peak demand reductions achieved from this program.

3.2.8 Recovery of Costs

In submitting this program for inclusion in the DMIA Scheme, Ausgrid confirms that the program costs:

- are not recoverable under any other jurisdictional incentive scheme
- are not recoverable under any other State or Commonwealth Government scheme
- are not included in the forecast capex or opex approved in the AER's distribution determination for the next regulatory control period, and
- are not eligible for recovery under the D-Factor Scheme.

3.3 Market research for residential air conditioner & pool pump options

3.3.1 Project Nature & Scope

A market research project to test residential air conditioner and pool pump control option take-up rates and to which extent these rates can change for a range of customer incentives.

The scope includes calling a market sample of air conditioner and pool pump owners, presenting various control options and product parameters, and finding out the required level of financial incentives for them to participate in the program.

3.3.2 Project Objectives

The main objective is to discover the likely customer acceptance rates of various air conditioner and pool pump control options for a range of financial incentives to customers.

3.3.3 Project Selection Process

Ausgrid has developed templates & guidelines for the preparation of project proposals for potential funding under the DMIA allowance.

When opportunities are identified for new projects, Ausgrid uses the following methodology when assessing projects for funding under the DMIA allowance:

1. A project proposal is prepared according to the Ausgrid DMIA template and guidelines, including additional criteria specified by Ausgrid (repeatability, suitability to geographically specific network constraints, and potential to be cost effective ($/kVA)).
2. The project proposal is reviewed by the Manager – Demand Management to ensure it meets the funding criteria specified under the DMIA Scheme.
3. Checks are also made to ensure that budget projects costs are within the DMIA allowance.

3.3.4 Implementation Plan

The intention is to conduct similar choice modelling market research as conducted by other DNSPs for their air conditioner and pool pump demand management programs. The intended results from the research is to gain an understanding of the acceptance rates for varying product offers including both varying customer incentives and control options (e,g; with and without override option). The percentage acceptance rates of the various scenarios will help to inform the number of households that might participate in a program and the costs required to obtain that participation rate.

3.3.5 Results

Project scope of work and the internal procurement documents have been developed to date. Project is scheduled for completion in 2012/13.

3.3.6 Summary of Budget & Actual Costs

A summary of the project budget and actual cost incurred in FY 2011/12 are shown below. All costs incurred for this project are categorised as opex.

Project budget:

Budget Item	**FY 11/12**	**FY 12/13**	**Total**
Choice Modelling (external contract)	0	$50,000	$50,000
Internal labour cost	$1,000	$9,000	$10,000
Total budget (excl GST)	$1,000	$59,000	$60,000

Actual project costs 2011-12:

2011/12 Expenditure (excl GST)	$863

3.3.7 Program Progress & Identifiable Benefits

At this stage there are no material peak demand reductions achieved from this program.

3.3.8 Recovery of Costs

In submitting this program for inclusion in the DMIA Scheme, Ausgrid confirms that the program costs:

- are not recoverable under any other jurisdictional incentive scheme
- are not recoverable under any other State or Commonwealth Government scheme
- are not included in the forecast capex or opex approved in the AER's distribution determination for the next regulatory control period, and
- are not eligible for recovery under the D-Factor Scheme.

3.4 Dynamic Peak Rebate (DPR) for medium to large non-residential customers

3.4.1 Project Nature & Scope

The Dynamic Peak Rebate (DPR) trial provides a financial incentive to medium to large non-residential customers to reduce their demand during the peak period on the 10-20 days of the year when network assets are operating at capacity.

3.4.2 Project Objectives

The high level objective is to determine the level of demand response available from the medium to large, low voltage, non-residential customer sector from a dynamic peak rebate.

Specific objectives are to:

- determine a program structure which encourages market participation from aggregators,
- develop a methodology which fairly and accurately estimates expected customer electricity demand and determines the rebate levels from the customer response,
- identify the take-up rate for various incentive levels and for a range of customer types for both interruptibility and genset supply, and
- identify the response rate from customers to reduce demand at peak periods in winter and summer.

3.4.3 Project Selection Process

Ausgrid has developed templates & guidelines for the preparation of project proposals for potential funding under the DMIA allowance.

When opportunities are identified for new projects, Ausgrid uses the following methodology when assessing projects for funding under the DMIA allowance:

1. A project proposal is prepared according to the Ausgrid DMIA template and guidelines, including additional criteria specified by Ausgrid (repeatability, suitability to geographically specific network constraints, and potential to be cost effective ($/kVA)).
2. The project proposal is reviewed by the Manager – Demand Management to ensure it meets the funding criteria specified under the DMIA Scheme.
3. Checks are also made to ensure that budget projects costs are within the DMIA allowance.

3.4.4 Implementation Plan

The work program includes a number of phases:

1. Program development will include the release of a discussion paper to seek the views of key stakeholders. The discussion paper will detail a strawman and pose key questions in order to reach a final program design.
2. The DPR offer will be released 3-4 months in advance of each dispatch season. The first offer release is scheduled for September 2012 for the summer 12/13 season, February 2013 for the winter 13 season and August 2013 for the summer 13/14 season. The offer will be communicated directly to aggregators and other interested parties as well as through the website. Advertisements will be placed in selected newspapers and magazines to notify as wide an audience as possible. A demand savings calculation methodology will be developed to determine the demand reductions for each customer and communicated to all prospective bidders.
3. Assessment of offers received will utilise a selection methodology which maximizes the ability to achieve the range of objectives set. Selected DR suppliers will be required to complete a trial dispatch in advance of the peak season.
4. Each peak season will consist of 3 to 5 dispatch events of 2-4 hours each. The events will be called in collaboration with the Network Control room.
5. Analysis and the final report will include analysis of customer interval data to determine customer response, feedback from aggregators and customers including detailed customer surveys, total program costs, program material describing decisions made, rationale and background material and case studies.

3.4.5 Results

A strawman program design was developed and the DPR discussion paper finalised in 2011/12. A review of eligible customers was completed and a proposed trial area selected to reflect the range of customers across the broader network. Preliminary review and development of a measurement methodology and sensitivity analysis has been completed with final methodology to be devised following discussion paper process. The discussion paper and associated stakeholder forum is scheduled for July 2012.

3.4.6 Summary of Budget & Actual Costs

A summary of the project budget and actual cost incurred in FY 2011/12 are shown below. All costs incurred for this project are categorised as opex.

Project budget:

Budget Item	**FY 11/12**	**FY 12/13**	**FY 13/14**	**Total**
Purchased demand response		$920,000	$1,380,000	$2,300,000
Internal labour cost	$20,000	$130,000	$100,000	$250,000
Total budget (excl GST)	$20,000	$1,050,000	$1,480,000	$2,550,000

Actual project costs 2011-12:

2011/12 Expenditure (excl GST)	$16,248

3.4.7 Program Progress & Identifiable Benefits

At this stage there are no material peak demand reductions achieved from this program.

3.4.8 Recovery of Costs

In submitting this program for inclusion in the DMIA Scheme, Ausgrid confirms that the program costs:

- are not recoverable under any other jurisdictional incentive scheme
- are not recoverable under any other State or Commonwealth Government scheme
- are not included in the forecast capex or opex approved in the AER's distribution determination for the next regulatory control period, and
- are not eligible for recovery under the D-Factor Scheme.

4 Progress on Approved Projects

4.1 Reliability improvements for large embedded generators

4.1.1 Project Nature & Scope

Embedded generators are seen as a significant potential demand management option. However, there are concerns that parallel connected embedded generators installed for non-network purposes may not exhibit the level of reliability required for them to operate as effective network support options. In particular, the protection and anti-islanding systems commonly used on embedded generators may result in generators being tripped due to disturbances in the network. As such disturbances are commonly the result of exactly the situation that network 'n-1' redundancy is intended to solve, it may be the case that an otherwise highly reliable generator might trip at the most critical time.

At small sizes, portfolio diversity can be used to help manage this risk. Effective risk management for larger generators (of the order of 10 MW) requires that the individual generator be made as reliable as possible.

This project used an existing large embedded generator with a good operating history, and completed a series of reliability improvement actions in conjunction with the operators. These included a review of protection systems and settings, modifications to permit better fault ride-through capacity and a network support contract with financial incentives for reliable performance.

4.1.2 Project Objectives

The project will seek to demonstrate that technical reliability improvement, coupled with commercial incentives are able to provide a sufficiently reliable outcome for large parallel connected embedded generators to be considered as effective network support in n-1 systems. For the purpose of this project, satisfactory reliability will be taken to be demonstrated if the generation delivers more than a specific target MVA quantity during all critical or potentially critical peak demand periods and does not disconnect during any network abnormalities.

4.1.3 Project Selection Process

Ausgrid has developed templates & guidelines for the preparation of project proposals for potential funding under the DMIA allowance.

When opportunities are identified for new projects, Ausgrid uses the following methodology when assessing projects for funding under the DMIA allowance:

1. A project proposal is prepared according to the Ausgrid DMIA template and guidelines, including additional criteria specified by Ausgrid (repeatability, suitability to geographically specific network constraints, and potential to be cost effective ($/kVA)).
2. The project proposal is reviewed by the Manager – Demand Management to ensure it meets the funding criteria specified under the DMIA Scheme.
3. Checks are also made to ensure that budget projects costs are within the DMIA allowance.

4.1.4 Implementation Plan

The work program includes a number of phases:

1. Identify and remedy issues that could lead to unreliability such as:
    a. technical (e.g. improvements in gas processing or facility technical upgrades)
    b. process (e.g. changes to manning or alert and repair response approaches)
    c. causes of instability (e.g. anti-islanding protection systems)
2. Negotiate and introduce commercial incentives to ensure generators are operated and maintained in ways that maximise likelihood of operation during network peak season and network abnormalities.
3. Monitor and verify overall generator reliability via the market meters.
4. Monitor generator operation during known network switching events.
5. Identify and measure network faults or abnormalities on the local 132 kV network and identify and interrogate any generator failure.

Project trial will occur over the winter 2011 period, with follow up performance tracking using Ausgrid network monitoring equipment in winter 2012.

4.1.5 Results

Technical, process and other issues were identified and a series of modifications were implemented to improve generator reliability during the peak winter season. These modifications included the following:

1. Replacement and adjustment of Loss of Mains relay
2. Implementation of plant mechanical and electrical modifications:
    a. Installation of a standby air compressor to reduce risk of interruptions
    b. Installation of a standby cooling water booster pump to duplicate existing cooling system
    c. Addition of 24VDC power supply in control panels to replace existing old sources of supply
    d. Additional isolation valves to improve flexibility of gas supply e.g.; isolate or bypass the area under repairs and maintenance
3. Implementation of surge protection to protect PLC, generator control and generator transformer panels
4. Upgrade of paging system
5. Installation of new fibre-optic communication link connecting generator station to Ausgrid's communications network

These modifications were supported with project funding. A further performance incentive was provided where the generators maintained a minimum output level for 99.1% of peak hours in the winter season (5pm – 9pm on working weekdays during 16 May – 16 Sep).

For the trial winter 2011 period, the generators were found to maintain the minimum output for 99.5% of the 356 contracted peak period hours (5pm – 9pm, 16 May – 16 Sep). Generator downtime was due to a water pipe failure in the generator cooling plant (90 mins) and a generator protection relay trip (reverse VARs and under voltage) considered to be driven by an 11 kV fault on an Ausgrid network panel and overly sensitive generator protection relay settings (9 mins).

This is an improvement over the winter 2010 period where the reliability for the network peak period (5pm – 9pm, 3 May – 10 Sep) was determined to be 97.65%. The improvement in the generator reliability during the peak season was considered to be influenced by the modifications and performance incentive.

A total of 11 major switching events occurred during the trial period. The generators successfully operated continuously through each switching event.

The performance of the generators during network faults or abnormalities cannot be tested artificially, so the trial required a network fault to occur. During the trial period, one network fault that occurred in the neighbouring network in the peak hours during the winter period was investigated. This fault occurred at the same time as a generator failure and an outage of 9 minutes. Measurement equipment sufficient to determine the cause of the generator outage was not in place and so could not be interrogated in detail. A second generator failure that was simultaneous with a local network fault occurred after the trial period (Nov 2011) when measurement equipment was in place. The analysis report determined that overly sensitive generator protection relay settings led to the generator outage. Although modifications to the protection settings considered sufficient to avoid further generator outages due to network faults have been made, it is not yet known if these changes are sufficient to avoid a network fault induced generator trip. Further investigation is required.

While modifications and incentives were seen to improve generator reliability during the peak winter season, it has not been possible to conclusively show that these modifications have improved the ability of the generator to 'ride through' network faults or disturbances. However, the analysis and alteration to relay protection settings that led to a generator outage linked to a network fault indicates that there is the potential for improvements to generator performance during network faults.

4.1.6 Cost Breakdown & Timing

A summary of the project budget and actual cost incurred in FY 2011/12 are shown below. All costs incurred for this project are categorised as opex.

Project budget:

Component	**FY 10/11**	**FY 11/12**	**Total**
Network Support incentives	$200,000	0	$200,000
Performance incentives	$175,000	$575,000	$750,000
Project Management, engineering and analysis	$50,000	$50,000	$100,000
Total (excl GST)	**$425,000**	**$625,000**	**$1,050,000**

Actual project costs:

Component	FY 10/11	FY 11/12	Total
Expenditure (excl GST)	$37,667	**$434,863**	$472,530

4.1.7 Program Progress & Identifiable Benefits

At this stage there are no material peak demand reductions achieved from this program.

4.1.8 Recovery of Costs

In submitting this program for inclusion in the DMIA Scheme, Ausgrid confirms that the program costs:

- are not recoverable under any other jurisdictional incentive scheme
- are not recoverable under any other State or Commonwealth Government scheme
- are not included in the forecast capex or opex approved in the AER's distribution determination for the next regulatory control period, and
- are not eligible for recovery under the D-Factor Scheme.

4.2 Dynamic Load Control of Small HW Systems

4.2.1 Project Nature & Scope

The project consists of a trial of implementing dynamic load control of small and medium sized hot water systems. The nature of the dynamic load control will be to control the hot water cylinders off for periods of typically three to five hours (or as may be found appropriate), and only as necessary to actively manage network demand.

4.2.2 Project Objectives

The primary objective of this project is to determine the level of technical and financial viability for the dynamic control of small and medium sized hot water cylinders. Specific objectives can be summaries as follows:

1. To determine a dispatchable control regime for application to small hot water heaters that provides satisfactory customer service and reductions in relevant peak demand.
2. To determine the proportion of customers for whom this would likely be acceptable, and what level of marketing effort would be needed to achieve various take-up rates. Also to test the relationship between the take-up rate and the size of reward offered.
3. To determine the level of diversified demand reduction per customer referenced to typical zone substation peak demand characteristics.
4. To accurately estimate the costs of such a program for local, commercial implementation.

4.2.3 Project Selection Process

Ausgrid has developed templates & guidelines for the preparation of project proposals for potential funding under the DMIA allowance.

When opportunities are identified for new projects, Ausgrid uses the following methodology when assessing projects for funding under the DMIA allowance:

1. A project proposal is prepared according to the Ausgrid DMIA template and guidelines, including additional criteria specified by Ausgrid (repeatability, suitability to geographically specific network constraints, and potential to be cost effective ($/kVA)).
2. The project proposal is reviewed by the Manager – Demand Management to ensure it meets the funding criteria specified under the DMIA Scheme.
3. Checks are also made to ensure that budget projects costs are within the DMIA allowance.

4.2.4 Implementation Plan

The main elements of the project implementation plan are summarised below:

1. Pilot: The concept of the pilot is to trial control of small hot water cylinders at approximately ten customer's premises. This pilot will test the workability of controlling such cylinders and will be demonstrated by the customer experience. Assuming the majority of installations pass the customer experience test then additional data from the trial will be evaluated in terms of, demand impact, metering profiles – pre and post control, percentage of time reset button used, etc. Phase 1 will also include having the data read and analysed for 30 random cylinders that have dedicated interval meters installed as part of a previous research project . This data will be used to provide an initial view of the load profile and diversity of usage of continuously supplied hot water cylinders; be the basis of analysis of the potential for control and design of the control regime; provide an

element of the control group for analysis of impact of control on coincident demand. Some of these customers may become members of the larger trial.

2. Market Research: Assuming that the pilot trial meets customer acceptability requirements, the next stage is to conduct survey / market research to refine product offerings. Typically a market survey would be undertaken to better understand the potential take-up rate, what reward structure would be required and how sensitive the take-up rate would be for the reward structure.
3. Larger Trial: If the results of the pilot trial are positive, and the results of the market survey indicate that a satisfactory take-up rate could be achieved, then a larger trial will be undertaken to further prove the product viability as well as establish better information on performance and cost structure. This trial would cover in the order of 100 participating customers and fully mimic the product, including enabling communications to the devices, realistic dispatching, having several channels to dispatch independently, and recovering meter data. Following this element, results will be analyzed and any issues arising from the trial will be addressed to determine how and if a further trial should proceed.
4. Full Scale Trial: A final optional phase is to undertake a full scale trial comprising about 1,000 participating customers to provide statistically significant results. Such a trial would also test all operational aspects as well as technical aspects of an actual deployment.

4.2.5 Results

During the 2011/12 year, Ausgrid is installed control switches to interrupt power supply to the participant's hot water system for a few hours, on occasional peak days over an 18-month period. Participants were paid an upfront incentive to take part in the trial.

The program commenced with research in November 2011, followed by customer offers from the end of June 2012.

200 customers were sent letters on 25 June offering a $50 financial incentive for participating in the trial program. Follow-up calls were made on 4 and 5 July. A total of 11 customers took up the offer, 5.5% of the target group. To date, six customers have had the control switches installed and cheques have been requested for their incentive payments.

An additional 200 customers were sent letters on 12 July offering a larger $100 financial incentive for participating in the trial. Follow-up calls are scheduled for 18 and 19 July.

500 customers will be sent a direct mail piece on 19 July offering a $100 incentive for participating in the program. This direct mail piece has been produced by a creative agency, and will be tested as an alternative to the standard letter. These customers will receive a follow-up call in the week commencing 30 July.

A further 500 customers will receive the same direct mail piece on 2 August offering a $100 incentive for participating in the program. These customers will not receive a follow up call.

4.2.6 Cost Breakdown & Timing

A summary of the project budget and actual cost incurred are shown below. All costs incurred for this project are categorised as opex.

Given the potential demand management benefits for the whole electricity network, the project is in collaboration with Transgrid, the transmission network service provider for the Ausgrid network area. Ausgrid and Transgrid have agreed to a 50/50 split in program costs for phases 1 and 2, with phase 3 and 4 costs by Ausgrid only.

In 2011/12, total project costs totaled $118,102, of which $91,102 were assigned to Ausgrid.

Project budget:

Component	**FY10/11**	**FY11/12**	**FY12/13**	**Total**
Phase 1 – Pilot Trial	$46,000	$109,000		$155,000
Phase 2 – Market Research		$23,000		$23,000
Phase 3 – Larger Trial		$115,000	$250,000	$365,000
Phase 4 – Full Scale Trial			$732,000	$732,000
Total	**$46,000**	**$247,000**	**$982,000**	**$1,275,000**

Actual project costs:

Component	FY 10/11	FY 11/12	FY12/13	Total
Total Expenditure (excl GST)	$15,296	$118,102		$133,398
Transgrid (phase 1 & 2 only)	$0	$27,000		$27,000
Ausgrid	$15,296	**$91,102**		$106,398

Transgrid has been invoiced for phase 1 and 2 only. Phase 3 operations are funded 100% by Ausgrid.

Project scheduled for completion in 2013/14.

4.2.7 Program Progress & Identifiable Benefits

At this stage there are no material peak demand reductions achieved from this program.

4.2.8 Recovery of Costs

In submitting this program for inclusion in the DMIA Scheme, Ausgrid confirms that the program costs:

- are not recoverable under any other jurisdictional incentive scheme
- are not recoverable under any other State or Commonwealth Government scheme
- are not included in the forecast capex or opex approved in the AER's distribution determination for the next regulatory control period, and
- are not eligible for recovery under the D-Factor Scheme.