Decision

Applications by DNSPs for Demand Management Innovation Allowance for:

Victorian DNSPs	2014 calendar year
TasNetworks	2013–14 financial year
Other DNSPs	2013–14, 2014–15 financial year as appropriate and carryover adjustments for the new regulatory control period

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AUSTRALIAN ENERGY REGULATOR

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Summary

The Demand Management Incentive Scheme (DMIS) 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 DMIS reports. The DMIS has been applied to all DNSPs in the NEM as part of our current distribution determinations.

The DMIS contains a Demand Management Innovation Allowance (DMIA) element. DMIA is provided to each DNSP in the form of a fixed allowance for each regulatory period. DNSPs are required to justify and seek our approval of their actual DMIA expenditures on demand management improvement projects.[1]

If a DNSP has not spent its DMIA allowance in the regulatory period, it will be required to return the amount of any underspend or unapproved amounts to customers in the form of tariff reduction. However, any over-spend 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 of these claims against six criteria, listed in section 2 of this paper. While descriptive, the criteria enable a wide range of demand management project options.

This report presents:

- our assessment findings of DNSPs' annual expenditure claims
- where relevant, our determination of any under-expenditure by the DNSPs that should be returned to the customers by way of network charge reduction in 2016–17.

DMIA reports from ActewAGL, Ausgrid, Endeavour Energy, Energex, Ergon Energy, Essential Energy, SA Power Networks and TasNetworks (the non-Victorian DNSPs) were provided to us as part of the DNSPs' 2013–14 and 2014–15 RIN responses as appropriate.

DMIA reports for CitiPower, Powercor, Jemena Electricity Networks, AusNet Services and United Energy (the Victorian DNSPs) were provided to us as part of their 2014 RIN responses.[2]

The projects undertaken vary considerably in both their nature and scale. For example, the projects include tariff based measures designed to incentivise customers to reduce their usage at times of peak demand. However, the majority of the projects were non-tariff based. These projects included various trials of technologies with the potential to reduce and/or shift demand, improving the storage of renewable energy generated

[1] The DMIS reports from each of the DNSPs are available on our website at www.aer.gov.au.
[2] Non-Victorian DNSPs' regulatory years align with financial years, whereas Victorian DNSPs regulatory years align with calendar years.

during non-peak times for subsequent use during peak periods, improving power factor correction to reduce the amount of electricity that requires transportation across a distribution network and load control options which result in shifting load to non-peak times.

We have approved all the DMIA expenditure claimed by all of the DNSPs as the expenditure complies with the DMIA criteria. Section 4 provides further details of each project for each DNSP that has been funded through the DMIA.

Summaries of each DNSP's DMIA expenditures are shown in the tables below.

With the exception of ActewAGL and SA Power Networks, who completed 100 percent of their respective DMIA allowances, all other ACT, NSW and QLD distributors did not use all of their DMIA allowances. Energex (26 percent) and Endeavour Energy (32 percent) spent less than half of their respective allowance.

TasNetworks utilised about 9 percent of its total allowance so far after 2 years into the 5 year regulatory control period.

In total, Victorian DNSPs reported around $4.0 million DMIA expenditure for 2014 reporting period. Overall, Victorian DNSPs have spent 57 percent of the DMIA allowance for the 2011 to 2015 regulatory period. AusNet Services has overspent its DMIA allowance.

Table 1 Summaries of DMIA expenditures to date for ACT/NSW DNSPs for the 2009–10 to 2013–14 regulatory control period ($'000 nominal)

DNSP	Total DMIA Allowance	DMIA approved to date	DMIA remaining for the period	Proportion of approved DMIA spent (%)
ActewAGL	533.1	533.1	0.0	100%
Ausgrid	5 330.6	4 121.5	1 209.1	77%
Endeavour Energy	3 198.4	1 017.9	2 180.5	32%
Essential Energy	3 198.4	2 670.5	527.8	83%
TOTAL	12 260.4	8 343.0	3 917.4	68%

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

Table 2 Summaries of DMIA expenditures to date for QLD/SA DNSPs for the 2010–11 to 2014–15 regulatory control period ($' 000 nominal)

DNSP	Total DMIA Allowance	DMIA approved to date	DMIA remaining for the period	Proportion of approved DMIA spent (%)
Energex	4 917.0	1 291.2	3 625.9	26%
Ergon Energy	5 300.7	3 477.5	1 823.2	66%
SA Power Networks	3 180.4	3 180.4	-	100%
TOTAL	13 398.2	7 949.1	5 449.1	59%

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

Table 3 Summaries of DMIA expenditures to date for VIC DNSPs for the 2011 to 2015 regulatory control period ($' 000 nominal)

DNSP	DMIA approved for 2014	Total DMIA Allowance	DMIA approved to date	DMIA remaining for the period	Proportion of approved DMIA spent (%)
AusNet Services	2 633.9	3 180. 6	3 193.2	-12.6	100%
CitiPower	403.9	1 060.2	523.0	537.2	49%
Jemena	63.9	1 060.2	803.6	256.6	76%
Powercor	230.6	3 180.6	438.8	2 741.8	14%
United Energy	661.7	2 120.4	1 082.1	1 038.3	51%
Total	3 994.0	10 602.0	6 040.7	4 561.3	57%

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

Table 4 Summaries of DMIA expenditures to date for TAS DNSP for the 2012–17 regulatory control period ($' 000, nominal)

DNSP	DMIA approved for 2013–14	Total DMIA Allowance	DMIA approved to date	DMIA remaining for the period	Proportion of approved DMIA spent (%)
TasNetworks	49.7	2 114.9	186.8	1 928.1	9%
Total	49.7	2 114.9	186.8	1 928.1	9%

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

In this 2016 DMIA determination the AER is required to calculate a carryover amount adjustment for the non–Victorian/Tasmanian electricity distributors. A similar carryover adjustment will be calculated for the Victorian and Tasmanian electricity distributors in the 2017 and 2018-19 regulatory control years respectively, when data on their total DMIA expenditure over this regulatory period are available.

We calculated the carryover adjustment to be applied in the NSW/ACT distributors' 2014–19 regulatory control period and the QLD/SA distributors' 2015–20 regulatory control period. Those carryover adjustments are set out in the table below:

Table 5 Carryover adjustment: NSW/ACT distributors ($'000 nominal)

	$'000 nominal (a)
ActewAGL	-95.3
Ausgrid	-2 560.6
Endeavour Energy	-3 301.6
Essential Energy	-891.2
Energex	-5 238.1
Ergon Energy	-2 575.8
SA Power Networks	0.0

Source: AER analysis and DMIA reports submitted by DNSPs;

Note: (a) the final carryover amounts will be subject to the final adjustment when the WACC is updated when DNSPs submit the annual pricing proposals.

1 Background

The Demand Management Incentive Scheme (DMIS) is a research and development fund which aims to provide incentives for Distribution Network Service Providers (DNSPs) to conduct research and investigation into innovative techniques for managing demand. The AER published its DMIS for the non-Victorian DNSPs (in October and November 2008) and Victorian DNSPs (in April 2009) in accordance with clause 6.6.3 of the National Electricity Rules (NER).

The Demand Management Innovation Allowance (DMIA) is part A of the DMIS. DMIA is provided to a DNSP in the form of a fixed amount of additional revenue at the commencement of each year of the regulatory period. As part of its distribution determination the AER has previously approved the allowances in accordance with Part A of the DMIS.

In the second year of the next regulatory control period, when 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 underspends 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.

Part B of the DMIS relates to foregone revenue. It allows the DNSPs to recover foregone revenue in a regulatory control period resulting from a reduction in the quantity of energy sold directly attributable to demand management projects or programs approved under Part A of the scheme.

A key objective of the DMIS is to assist in enhancing industry knowledge of practical demand management projects and programs through the annual publication of DMIS reports from DNSPs. As such, the DMIS sets out annual reporting requirements for DNSPs for the regulatory control period. DNSPs are required to submit a report to the AER on their DMIS expenditure shortly after the end of each regulatory year. The information provided in a DNSP's annual DMIS report is used in the AER's assessment of a DNSP's compliance with the DMIA criteria and entitlement to recover expenditure under the DMIA.

Chapter 2 provides the criteria contained in the DMIS, against which the AER is required to assess claims for the DMIA each year.

Chapter 3 provides a summary of our annual DMIA compliance assessment results of all DNSPs' DMIA reports and supporting information. It also provides a carryover amount adjustment for the non–Victorian/Tasmanian electricity distributors, which will be included in setting the 2016–17 network charges.

Chapters 4 to 16 of the report provide the detailed assessment of all DNSPs' DMIA expenditure claims against the criteria contained in the DMIS.

2 Demand Management Incentive Scheme Criteria

The AER is required to assess claims for the DMIA against the criteria contained in the DMIS each year. 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.

3 DMIA Assessment

3.1 Annual DMIA Assessment

We conducted our DMIA compliance assessments based on the DMIA reports (for the 2013–14 financial year, 2014–15 financial year or 2014 calendar year as applicable) and responses to further information requests received from the following DNSPs:

- ActewAGL (for 2013–14 financial year)
- Ausgrid (for 2013–14 financial year)
- Endeavour Energy (for 2013–14 financial year)
- Essential Energy (for 2013–14 financial year)
- Ergon Energy (for 2013–14 and 2014–15 financial year)
- Energex (for 2013–14 and 2014–15 financial year)
- SA Power Networks (for 2013–14 and 2014–15 financial year)
- CitiPower (for 2014 calendar year)
- Jemena Electricity Networks (for 2014 calendar year)
- Powercor (for 2014 calendar year)
- AusNet Services (for 2014 calendar year)
- United Energy (for 2014 calendar year)
- TasNetworks (for 2013–14 financial year)

With the exception of ActewAGL and SA Power Networks, who completed 100 percent of their respective DMIA allowances, all other distributors did not use all of their DMIA allowances. Energex (26 percent) and Endeavour Energy (32 percent) spent less than half of their respective allowance.

TasNetworks utilised about 9 percent of its total allowance so far after 2 years into the 5 year regulatory control period.

In total, Victorian DNSPs reported around $4.0 million DMIA expenditure for 2014 reporting period. Overall, Victorian DNSPs have spent 57 percent of the DMIA allowance for the 2011 to 2015 regulatory period. AusNet Services has overspent its DMIA allowance.

Table 6 ACT/NSW DNSPs DMIA expenditure for the 2009–10 to 2013–14 regulatory control period ($'000 nominal)

DNSP	DMIA approved for 2013–14	Total DMIA allowance for the period	Total DMIA approved to date	DMIA remaining for the period	Proportion of approved DMIA spent
ActewAGL	442.8	533.1	533.1	0	100%
Ausgrid	2 473.1	5 330.6	4 121.5	1 209.1	77%
Endeavour Energy	173.4	3 198.4	1 017.9	2 180.5	32%
Essential Energy	380.8	3 198.4	2 670.5	527.8	83%
TOTAL	3 470.1	12 260.4	8 343.0	3 917.4	68%

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

Table 7 QLD/SA DNSPs DMIA expenditures the 2010–11 to 2014–15 regulatory control period ($' 000 nominal)

DNSP	DMIA approved for 2013–14	DMIA approved for 2014–15	Total DMIA allowance	DMIA approved to date	DMIA remaining for the period	Proportion of approved DMIA spent
Energex	0	1 240.9	4 917.0	1 291.2	3 625.9	26%
Ergon Energy	850.7	747.3	5 300.7	3 477.5	1 823.2	66%
SA Power Networks	653.6	662.3	3 180.4	3 180.4	-	100%
TOTAL	1 504.3	2 650.4	13 398.2	7 949.1	5 449.1	59%

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

Table 8 VIC DNSPs DMIA expenditure for the 2011 to 2015 regulatory control period ($' 000 nominal)

DNSP	DMIA approved for 2014	Total DMIA allowance	DMIA approved to date	DMIA remaining for the period	Proportion of approved DMIA spent
AusNet Services	2 633.9	3 180. 6	3 193.2	-12.6	100%
CitiPower	403.9	1 060.2	523.0	537.2	49%
Jemena	63.9	1 060.2	803.6	256.6	76%
Powercor	230.6	3 180.6	438.8	2 741.8	14%
United Energy	661.7	2 120.4	1 082.1	1 038.3	51%
Total	3 994.0	10 602.0	6 040.7	4 561.3	57%

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

Table 9 TAS DNSP DMIA expenditures for the 2012–13 to 2016–17 regulatory control period ($' 000, nominal)

DNSP	DMIA approved for 2013–14	Total DMIA allowance	DMIA approved to date	DMIA remaining for the period	Proportion of approved DMIA spent
TasNetworks	49.7	2 114.9	186.8	1 928.1	9%
Total	49.7	2 114.9	186.8	1 928.1	9%

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

3.2 Carryover adjustment

3.2.1 Background

In this 2016 DMIA determination the AER is required to calculate a carryover amount adjustment for the non–Victorian/Tasmanian electricity distributors. A similar carryover adjustment will be calculated for the Victorian and Tasmanian electricity distributors in the 2017 and 2017-18 regulatory control years respectively, when data on their total DMIA expenditure over the current regulatory period are available.

Under the DMIA scheme, distribution network businesses are given an allowance for demand management projects. The allowance forms part of their regulated revenue requirement for a regulatory control period. The distribution network businesses do not have to spend the allowance they are given and may decide to only spend some, or none, of it.

Factoring this in, the DMIA scheme provides that the AER must calculate a carryover adjustment. The purpose of the carryover adjustment is to return to customers the

proportion of an electricity network distributor's DMIA allowance that has not been spent. It also returns to customers any expenditure incurred by an electricity network distributor, but not approved by the AER. In that regard, the carryover adjustment is a "true–up" between an electricity network distributor's ex ante DMIA allowance for a regulatory control period and the AER's ex post review of any under–expenditure, with the difference returned to customers.

Additionally, the carryover adjustment must be calculated in a way that distribution network businesses will be indifferent in net present value (NPV) terms to its DMIA expenditure profile over the regulatory control period. The purpose of this is to 'remove any incentive for distribution network businesses to defer or advance expenditure'.[3]

The carryover adjustment operates between regulatory periods. For example, in the case of the NSW and ACT electricity distributors any under–expenditure in their 2009–14 regulatory control period will be "trued–up" by applying the carryover adjustment in the 2014–19 regulatory control period. Similarly, the QLD/SA electricity distributors will have a carryover adjustment applied in their 2015–20 regulatory control periods for any under–expenditure in their 2010–15 regulatory control periods.

3.2.2 Calculation of carryover adjustment

When calculating the carryover adjustment to be applied to the non–Victorian distributors revenues in their current regulatory control periods, we are required to use the formula set out in the DMIA scheme.

This formula calculates the carryover adjustment on a cumulative basis. That is, any under– or over–expenditure in one year is rolled over to the following year. It also includes a weighted average cost of capital (WACC) adjustment. By making this WACC adjustment, a distributor is indifferent in NPV terms to when it spends its DMIA allowance over a regulatory control period. The DMIA scheme carryover formula states:

$$C_t = C_{t-1} - \left[\frac{(R_t - A_t)}{(1+i)} \times (1+i)^n (1+i^*)^2\right]$$

Where:

C_t = cumulative carryover balance

R_t = ex–ante revenue allowance under the scheme for regulatory year "t"

A_t = ex–post expenditure approved under the scheme for the regulatory year "t"

i = nominal vanilla WACC as set in the distribution determination for the regulatory control period the expenditure is incurred

[3] AER, *Demand management incentive scheme for the ACT and NSW 2009 distribution determinations: Demand management innovation allowance scheme*, November 2008, p. 17.

n = the number of years remaining in the regulatory control period in which the expenditure is incurred

i^* = nominal vanilla WACC as set in the distribution determination for the regulatory control period in which the carryover adjustment is made.

Using the DMIA scheme carryover formula, we calculated the carryover adjustment to be applied to each non–Victorian electricity distributor. Our calculations using each distributor's DMIA ex ante allowance and our ex post review of DMIA expenditure are set out in Table 10 to Table 16. The actual carryover adjustment which we will apply to each distributor is specified in section 3.2.3 below.

Table 10 ActewAGL: carryover amount calculation ($'000 nominal)

	2009–10	2010–11	2011–12	2012–13	2013–14
Ex ante allowance	100.9	103.8	107.3	109.2	111.9
Ex post expenditure	28.6	8.4	19.7	33.6	442.8
Cumulative carryover balance (a)	-114.7	-253.8	-371.3	-464.4	-95.3

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

Note: (a) the final carryover amounts will be subject to the final adjustment when the WACC is updated when DNSPs submit the annual pricing proposals.

Table 11 Ausgrid: carryover amount calculation ($'000 nominal)

	2009–10	2010–11	2011–12	2012–13	2013–14
Ex ante allowance	1009.1	1037.9	1073.0	1091.9	1118.7
Ex post expenditure	0.0	53.0	661.3	934.1	2 473.2
Cumulative carryover balance (a)	-1 683.7	-3 177.4	3 744.9	-3 942.6	-2 560.6

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

Note: (a) the final carryover amounts will be subject to the final adjustment when the WACC is updated when DNSPs submit the annual pricing proposals.

Table 12 Endeavour Energy: carryover amount calculation ($'000 nominal)

	2009–10	2010–11	2011–12	2012–13	2013–14
Ex ante allowance	605.5	622.7	643.8	655.2	671.2
Ex post expenditure	0.0	163.8	268.6	412.0	173.4
Cumulative carryover balance (a)	-1 010.2	-1 706.2	-2 223.3	-2 527.9	-3 301.6

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

Note: (a) the final carryover amounts will be subject to the final adjustment when the WACC is updated when DNSPs submit the annual pricing proposals.

Table 13 Essential Energy: carryover amount calculation ($'000 nominal)

	2009–10	2010–11	2011–12	2012–13	2013–14
Ex ante allowance	605.5	622.7	643.8	655.2	671.2
Ex post expenditure	312.9	245.0	755.2	976.6	380.8
Cumulative carryover balance (a)	-488.2	-1 061.0	-907.5	-504.7	-891.2

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

Note: (a) the final carryover amounts will be subject to the final adjustment when the WACC is updated when DNSPs submit the annual pricing proposals.

Table 14 Energex: carryover amount calculation ($'000 nominal)

	2010–11	2011–12	2012–13	2013–14	2014–15
Ex ante allowance	991.5	982.4	982.2	986.2	974.7
Ex post expenditure	50.3	0.0	0.0	0.0	1 240.9
Cumulative carryover balance (a)	-1 533.2	-2 991.8	-4 321.0	-5 537.3	-5 238.1

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

Note: (a) the final carryover amounts will be subject to the final adjustment when the WACC is updated when DNSPs submit the annual pricing proposals.

Table 15 Ergon Energy: carryover amount calculation ($'000 nominal)

	2010–11	2011–12	2012–13	2013–14	2014–15
Ex ante allowance	1 016.5	1 032.6	1 058.4	1 089.4	1 103.9
Ex post expenditure	458.1	540.1	881.3	850.7	747.3
Cumulative carryover balance (a)	-909.6	-1 640.8	-1 880.5	-2 174.9	-2 575.8

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

Note: (a) the final carryover amounts will be subject to the final adjustment when the WACC is updated when DNSPs submit the annual pricing proposals.

Table 16 SA Power Networks: carryover amount calculation ($'000 nominal)

	2010–11	2011–12	2012–13	2013–14	2014–15
Ex ante allowance	609.9	619.5	635.0	653.6	662.3
Ex post expenditure (a)	609.9	619.5	635.0	653.6	662.3
Cumulative carryover balance (b)	0.0	0.0	0.0	0.0	0.0

Note: (a): During the 2010-15 period, SA Power Networks operates under both DMIA schemes of the AER and Essential Services Commission of South Australia. Due to previous cost allocation error, SA Power Networks omitted to approval for DM projects under the AER's DMIA for 2010–13. It has re-allocated the DMIA expenditure for these three years. It has overspent the combined DM Allowance for the 2010–15 regulatory control period—actual total expenditure of 14.84M (2010 dollars) compared with the total combined allowance of $14.59M (2010 dollars) from the AER and the Essential Services Commission of South Australia. Refer to the advice from SA Power Networks dated 4 February 2016.

(b) The final carryover amounts will be subject to the final adjustment when the WACC is updated when DNSPs submit the annual pricing proposals.

3.2.3 AER's determination of carryover adjustment

Using the calculations in section 3.2.2 above, we calculated the carryover to be applied in the NSW/ACT distributors' 2014–19 regulatory control QLD/SA distributors' 2015–20 regulatory control period. Table 17 and

Table 18 set out those carryover adjustments.

Table 17 Carryover adjustment: NSW/ACT DNSPs ($'000 nominal)

	$'000 nominal (a)
ActewAGL	-95.3
Ausgrid	-2 560.6
Endeavour Energy	-3 301.6
Essential Energy	-891.2

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

Note: (a) the final carryover amounts will be subject to the final adjustment when the WACC is updated when DNSPs submit the annual pricing proposals.

Table 18 Carryover adjustment: QLD/SA DNSPs ($'000 nominal)

	$'000 nominal (a)
Energex	-5 238.1
Ergon Energy	-2 575.8
SA Power Networks	0.0

Source: AER analysis and DMIA reports submitted by DNSPs; numbers may not be exact due to rounding.

Note: (a) the final carryover amounts will be subject to the final adjustment when the WACC is updated when DNSPs submit the annual pricing proposals.

4 ActewAGL

We have approved ActewAGL's 2013–14 DMIA expenditure of $442 759 for the costs of an ongoing demand management project that meets the DMIA criteria. The following section sets out our assessment of this project. For more detailed information about the project, please refer to ActewAGL's 2013–14 DMIA report.

4.1 Power Factor Correction

4.1.1 Project overview

ActewAGL and TransGrid's joint Power Factor Correction project commenced in 2009–10. ActewAGL's 2013–14 DMIA expenditure is for the continuation of this project. The project aims to reduce demand for standard control services for large commercial customers who record 15 minute interval consumption data across its network.

4.1.2 Assessment against DMIA criteria

Criteria #1 The project is a measure undertaken by ActewAGL to reduce peak apparent demand on commercial feeders. The project aims to reduce demand for standard control services by identifying customers for whom suitable power correction equipment may be installed.

Criteria #2 This is a broad-based demand management project that targets large commercial users.

Criteria #3 This project will explore potentially efficient demand management mechanisms in terms of power factor correction equipment installation in existing premises

Criteria #4 Non-tariff based

Criteria #5 This criterion is met because expenditure for this project cannot be 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 Opex

5 Ausgrid

We approve DMIA expenditure of $2 473 150 for 12 projects because they meet the DMIA criteria. Of these 12 projects, Ausgrid began two new projects in 2013–14 and continued another ten (which have previously been approved by the AER). The following section sets out our assessment of the individual projects. For more detailed information about these projects, please refer to Ausgrid's 2013–14 DMIA report.

5.1 Automatic demand response

5.1.1 Project overview

This is a new project that seeks to investigate the use of automated demand response (Auto DR) technologies at non–residential customer sites. Once installed, Auto DR technologies enable customers to initiate pre–programmed demand response strategies throughout their building or energy management system, without any manual intervention. Ausgrid claimed DMIA expenditure in 2013–14 of $24 931 for this project, which is still in the research and development stage.

5.1.2 Assessment against DMIA criteria

Criteria #1 The project is a measure undertaken by Ausgrid to manage demand through non–network alternatives. Its aim is to reduce or shift demand by conducting research and development into the viability of technology capable of automating the load responses of customers.

Criteria #2 This is a broad–based demand management project that targets non–residential customers.

Criteria #3 This condition is satisfied since the project investigates technologies that may offer innovative ways to build on existing demand management capabilities.

Criteria #4 Non–tariff based.

Criteria #5 This criterion is met because expenditure for this project cannot be 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 Opex.

5.2 Pool pump demand study

This is a new project that trials a rebate to customers who purchase and install an energy efficient pool pump. It also incorporates a study into the reduction in diversified summer peak demand that is achievable when an energy efficient pool pump is installed. Ausgrid claimed DMIA expenditure in 2013–14 of $8 450 for this project, which is still in the development stage.

5.2.1 Assessment against DMIA criteria

Criteria #1 The installation of energy efficient pool pumps can help reduce summer peak demand, which may reduce the need for network augmentation.

Criteria #2 This is a peak demand project.

Criteria #3 This project satisfies this condition as it explores a potentially efficient demand management mechanism (offering rebates to customers that purchase and install energy efficient pool pumps).

Criteria #4 Non-tariff based

Criteria #5 This criterion is met because expenditure for this project cannot be 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 Opex

5.3 Dynamic peak rebate for non-residential customers

5.3.1 Project overview

The Dynamic Peak Rebate (DPR) trial provided a financial incentive to medium to large non-residential customers to reduce their demand during the summer peak demand period on the 5-10 days of the year when network assets are operating at maximum demand. The DPR approach allows the customer to discover their own least cost demand reduction to supply reductions for network deferral or minimise load at risk. Ausgrid claimed DMIA expenditure in 2013–14 of $1 269 686 for this project.

5.3.2 Assessment against DMIA criteria

Criteria #1 Reducing peak demand through using demand reduction can help defer the need for network augmentation.

Criteria #2 This is a peak demand management project.

Criteria #3 Dynamic peak rebate is part of an efficient demand management strategy.

Criteria #4 Non-tariff based

Criteria #5 This criterion is met because expenditure for this project cannot be 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 Opex

5.4 Dynamic Load Control of Small Hot Water Systems

5.4.1 Project overview

This project is aimed at trialling a load control option for small and medium sized hot water systems. To do this, between five and ten days per year the electricity supply to participating customers' water tanks was turned off for three to five hours. Ausgrid claimed DMIA expenditure in 2013–14 of $20 642 for this project.

5.4.2 Assessment against DMIA criteria

Criteria #1 Reducing peak demand through using load control can help defer the need for network augmentation.

Criteria #2 This is a peak demand management project.

Criteria #3 Load control options are part of an efficient demand management strategy.

Criteria #4 Non-tariff based

Criteria #5 This criterion is met because expenditure for this project cannot be 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 Opex

5.5 Subsidised Off-peak Hot Water Connections

5.5.1 Project overview

Ausgrid's Subsidised Off-peak Hot Water Connections program involves connecting the hot water systems of low income and vulnerable households to off peak electricity supply. This is a joint collaboration with NSW Land and Housing Corporation. Ausgrid claimed DMIA expenditure in 2013–14 of $10 602 for this project.

5.5.2 Assessment against DMIA criteria

Criteria #1 This project aims to shift hot water loads to off peak times and by doing so helps reduce peak demand and defer network augmentation.

Criteria #2 This is a peak demand management program.

Criteria #3 Spreading load to off-peak times to lower peak demand is part of an efficient demand management strategy.

Criteria #4 Non-tariff based

Criteria #5 This criterion is met because expenditure for this project cannot be 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 Opex.

5.6 CBD embedded generator connection

5.6.1 Project overview

This project is to develop, design and test an alternative 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. Ausgrid claimed DMIA expenditure in 2013–14 of $101 636 for this project.

5.6.2 Assessment against DMIA criteria

Criteria #1 Enabling greater levels of embedded generation in the Sydney CBD which can help alleviate pressure on CBD electricity demand

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

Criteria #3 Better integration of embedded generation can be used as part of an effective demand management strategy.

Criteria #4 Non-tariff based

Criteria #5 This criterion is met because expenditure for this project cannot be 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 Opex

5.7 Air conditioner and pool pump load control

5.7.1 Project overview

This project involves the development of Demand Response Enabling Devices (DREDs) for air conditioners and pool pumps. It also included a customer trial where 40 "ripple DREDs" and 68 "SMS DREDs" were fitted to air conditioners. For the ripple DRED customers, dispatch events were called on 9 separate occasions during the summer season with no negative feedback from participants. For the SMS DREDs, customers had the opportunity to override the dispatch event with no customer requesting an override. Ausgrid claimed DMIA expenditure in 2013–14 of $585 715 for this project.

5.7.2 Assessment against DMIA criteria

Criteria #1 Direct load control of air conditioners and pool pumps can help lower summer peak demand. The results from this customer trial will help facilitate the take up of direct load control options.

Criteria #2 This is a peak demand management project.

Criteria #3 This research improves Ausgrid's capacity to effectively deploy these technologies that enable peak demand reductions.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

5.8 Grid Battery Trial

5.8.1 Project overview

This project will investigate the potential benefits of using network grid-side battery storage as a means for reducing peak demand on the network with a trial over the summer 2013–14 period. The trial will test for reliability, quality and effectiveness at reducing summer peaks. It will also look into optimum battery management and control methodologies. Ausgrid claimed DMIA expenditure in 2013–14 of $259 026 for this project.

5.8.2 Assessment against DMIA criteria

Criteria #1 This is a trial of network grid-side battery storage (rather than domestic storage) that can be drawn on to help reduce peak demand (and in turn avoid network augmentation).

Criteria #2 This is a peak demand project.

Criteria #3 Grid batteries are an innovative technology that has the potential to improve Augrid's demand management capability.

Criteria #4 Non-tariff based

Criteria #5 This criterion is met because expenditure for this project cannot be 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 Opex

5.9 Off peak 2 summer scheduling

5.9.1 Project overview

This project involves trialling a new summer load control schedule for summer peak reduction for customers with Controlled Load 2 tariffs. The main objective of the trial is to investigate the potential issues and barriers for implementing a summer scheduling regime for Controlled Load 2 customers across the whole network. Ausgrid claimed DMIA expenditure in 2013–14 of $100 531 for this project.

5.9.2 Assessment against DMIA criteria

Criteria #1 This project meets this requirement as it shifts load outside of peak times which will lower peak demand reduce the need for network augmentation.

Criteria #2 This is a peak demand management project.

Criteria #3 This project satisfies this condition as it explores a potentially efficient demand management mechanism (reducing the impact of hot water systems at times of peak demand through load control).

Criteria #4 Non-tariff based

Criteria #5 This criterion is met because expenditure for this project cannot be 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 Opex

5.10 Large customer power factor correction

5.10.1 Project overview

Power factor correction at customer premises lowers the peak demand in kVA and reduces the electrical infrastructure requirements for networks. This project examines the incentives required to encourage medium to large customers whose power factor is below the network standard during peak periods to install power factor correction equipment. Ausgrid claimed DMIA expenditure in 2013–14 of $75 506 for this project.

Ausgrid was not eligible to recover its costs under the NSW Energy Savings Scheme, as this project did not include installation of any power factor correction equipment, nor did Ausgrid provide any funding to customers to install power factor correction equipment.

5.10.2 Assessment against DMIA criteria

Criteria #1 By correcting the customer's power factor, the kVA demand from customers is reduced.

Criteria #2 This project can help to improve energy efficiency overall (i.e. broad-based demand management) as well as be useful in managing peak demand as Ausgrid is proposing to target customers in areas that have network constraints.

Criteria #3 Encouraging power factor correction is a useful tool to manage demand.

Criteria #4 Non-tariff based

Criteria #5 This criterion is met because expenditure for this project cannot be 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 Opex

5.11 Co–managing home energy demand

5.11.1 Project overview

This project involves using qualitative research to better understand residential users' level of knowledge on peak demand and how they are responding to current demand management activities. This will assist in developing strategies and programs to reduce peak demand from the residential sector.

In 2013–14, Ausgrid investigated methods for studying and predicting changes in the energy demand of customers. The research had a specific focus on key appliances which influence demand, such as air conditioners, hot water systems and pool pumps. The design, delivery and cost effectiveness of future demand management solutions should be informed by the research. Ausgrid claimed DMIA expenditure in 2013–14 of $12 537 for this project.

5.11.2 Assessment against DMIA criteria

Criteria #1 Understanding customer behaviour can help Ausgrid to have more effective peak demand management strategies which in turn can reduce peak demand which defers the need for network augmentation.

Criteria #2 This is a peak demand management program.

Criteria #3 This customer research builds Ausgrid's capacity to deliver effective peak demand management programs.

Criteria #4 Non-tariff based

Criteria #5 This criterion is met because expenditure for this project cannot be 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 Opex

5.12 Verification of demand savings from energy efficiency programs

5.12.1 Project overview

Ausgrid are working jointly with NSW government on this project which aims to identify which energy efficiency programs or initiatives offered by NSW government organisations are effective at reducing peak demand. Ausgrid claimed DMIA expenditure in 2013–14 of $3 889 for this project.

5.12.2 Assessment against DMIA criteria

Criteria #1 This project will help the government to target energy efficiency initiatives that best contribute to reductions in peak demand which in turn can help reduce network augmentation.

Criteria #2 This project focuses on peak demand reduction.

Criteria #3 The collaborative approach and evidence-based focus will help build the demand management capacity of both Ausgrid and the NSW government.

Criteria #4 Non-tariff based

Criteria #5 This criterion is met because expenditure for this project cannot be 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 Opex

6 Endeavour Energy

We approve DMIA expenditure of $173 360 for two projects because they meet the DMIA criteria. One of these is a continuing project which has already been approved by the AER. The following section sets out our assessment of the individual projects. For more detailed information about each project, please refer to Endeavour Energy's 2013–14 DMIA report.

6.1 Glenmore Park Demand Response Trial

6.1.1 Project overview

This is a continuing project involving a customer trial into how peak demand can be reduced. The participating customers, which had existing smart meters installed at their premises, were offered time–based financial incentives to reduce demand on selected peak days. Additionally, the trial sought to qualitatively assess, via customer survey, the perceived benefit of in home displays. It also assessed the technical capability of using smart meters for the control of air conditioners. Endeavour Energy claimed DMIA expenditure in 2013–14 of $127 269 for this project.

6.1.2 Assessment against DMIA criteria

Criteria #1 This project investigates how smart meters can be used to reduce peak demand through time-based incentives, information from in home displays and direct control of air-conditioners.

Criteria #2 This project is a peak demand management project.

Criteria #3 This project explores how smart meters, an increasingly prevalent technology, can be used to manage peak demand.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex and capex

6.2 Pool pump trial

This is a new project which trials methods for allowing customers to switch their pool pump from a "Domestic" to a "Controlled Load 2" supply. The trial's main objectives are to quantify peak demand reduction, investigate when customers use their pool pumps, and to identify the costs associated with controlled load conversion. To facilitate switching, customers were offered a $150 financial incentive and a reduction in the energy costs incurred by pool pump operations—which could lead to savings of

several hundred dollars. Endeavour Energy claimed DMIA expenditure in 2013–14 of $46 091 for this project.

6.2.1 Assessment against DMIA criteria

Criteria #1 The control of pool pumps through the Control Load 2 circuit could help reduce summer peak demand, which may reduce the need for network augmentation.

Criteria #2 This project is a peak demand management project.

Criteria #3 This project explores customer pool pump usage behaviour and the control of pool pumps through the Control Load 2 circuit.

Criteria #4 Both tariff and non-tariff incentives

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex and capex

7 Essential Energy

Essential Energy is claiming 2013–14 DMIA expenditure for six demand management projects totalling $380 836. We approve this expenditure as it meets the DMIA criteria. The following section sets out our assessment of the individual projects. For more detailed information about these projects, please refer to Essential Energy's 2013–14 DMIA report.

7.1 Grid Interactive Inverter program 20kVA based

7.1.1 Project overview

The grid interactive inverter program involves research, development and field testing of four quadrant inverters which can be used to avoid or defer network augmentation in low and medium voltage distribution networks. Following field trials in previous years, further monitoring, maintenance and upgrades to the inverter installations occurred in 2013–14. Development of a pole mounted version, which may offer a more cost effective installation type, also occurred. Essential Energy claimed DMIA expenditure in 2013–14 of $51 157 for this project.

7.1.2 Assessment against DMIA criteria

Criteria #1 This project involves testing four quadrant inverters, which are an enabling technology for energy storage, and reactive power support which has the potential to shift/reduce demand at peak times rather than relying on network augmentation.

Criteria #2 This is a peak demand management program.

Criteria #3 This project explores innovative technologies to build demand management capability and capacity.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex and Capex

7.2 Grid Interactive Inverter program 5kVA based

7.2.1 Project overview

This project builds on the ‘Grid Interactive Inverter program 20kVA based’. The 5kVA project focuses on developing this technology for use at a residential level. During 2013–14, a number of 5kVA four quadrant inverters were tested at the Clearwater Zone Substation in Port Macquarie. Essential Energy claimed DMIA expenditure in 2013–14 of $52 270 for this project.

7.2.2 Assessment against DMIA criteria

Criteria #1 Unlike the 20kVA based project which is used at the network level, the 5kVA inverters are developed to use at the residential level to support renewable generation connections while minimising adverse impacts to the distribution network.

Criteria #2 The technology explored in this project can be used in broad-based demand management programs and to address specific network constraints.

Criteria #3 This project explores innovative technologies to build demand management capability and capacity.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex and Capex

7.3 Conservation voltage reduction through low voltage regulators

Conservation voltage reduction is a lowering of voltage at the customer connection point in order to increase end use efficiency, lower peak demand, lower energy use and decrease losses without adversely affecting power quality. It is also known as voltage optimisation. Overall project costs in 2013–14 include research, purchasing and testing of two three phase low voltage regulators by appropriately qualified staff. Essential Energy claimed DMIA expenditure in 2013–14 of $142 821 for this project.

7.3.1 Assessment against DMIA criteria

Criteria #1 Low voltage regulators have the potential to support voltage at times of peak demand and generally help conserve energy.

Criteria #2 The technology explored in this project can be used in broad-based demand and peak demand management program.

Criteria #3 This project explores ways to better manage demand by improving the effectiveness of existing network capacity.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex and Capex

7.4 Capacitor package development

7.4.1 Project overview

This project explores the use of distribution feeder capacitors to help manage demand. They can be used to supplement substation power factor correction, provide an alternative to substation capacitors and manage distribution voltage profiles, increase network capacity and reduce line losses. Essential Energy has previously trialled capacitor installation in 2011–12. This project helps facilitate wider implementation of distribution capacitor banks in Essential Energy's network by developing maintenance plans, developing manuals and educating end users. Essential Energy claimed DMIA expenditure in 2013–14 of $18 529 for this project.

7.4.2 Assessment against DMIA criteria

Criteria #1 Distribution pole top capacitor banks are being used to reduce demand (for example, they may increase network capacity by correcting the power factor of a feeder) and avoid network augmentation.

Criteria #2 This project targets the use of distribution pole top capacitors in areas where there are specific network constraints at a particular location to help reduce peak demand.

Criteria #3 Capacitor banks are highly utilised in the United States and this technology is being transferred for use in Essential Energy's business to build its demand management capability.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

7.5 Energy and demand audits

7.5.1 Project overview

The Energy and Demand Audits project was developed in order to analyse the minor changes consumers can make to processes and equipment which benefit both the consumer and the network. By the end of the 2013–14 financial year, a total of 17 audits had been completed with approximately 171 demand management initiatives investigated. Results have been compiled and they show that substantial benefits are available to both the consumers involved and the network. Essential Energy claimed DMIA expenditure in 2013–14 of $23 055 for this project.

7.5.2 Assessment against DMIA criteria

Criteria #1 Energy and demand audits analyse a customer's usage and this information can be used to identify suitable demand management initiatives for particular customer classes.

Criteria #2 This project will help identify both broad-based demand management and peak demand management initiatives.

Criteria #3 This project will improve demand management capability and explore potentially efficient demand management mechanisms.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

7.6 Switched reactors

This project aims to develop knowledge and test the viability of using controlled switching to defer expenditure on single wire earth return (SWER) systems. As part of this project, Essential Energy collaborated with a university based research group. It found that using "switched reactors" in combination with specifically developed algorithms can control voltage swings, a key driver of augmentation expenditure on SWER systems. In 2013–14, Essential Energy placed orders for five switched reactors, which will allow for field testing to occur in constrained locations. Essential Energy claimed DMIA expenditure in 2013–14 of $93 004 for this project.

Criteria #1 The development of switched reactors may allow Essential Energy to better manage voltage swings, which in turn can defer augmentation on SWER lines.

Criteria #2 The technology explored in this project can be used in broad-based demand and peak demand management program.

Criteria #3 This project will improve demand management capability and explore potentially efficient demand management mechanisms.

Criteria #4 Non–tariff based.

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex and Capex.

8 Energex

Energex is claiming 2014–15 DMIA expenditure for five demand management projects totalling $1 240 858. We approve this expenditure as it meets the DMIA criteria. The following section sets out our assessment of the individual projects. For more detailed information about these projects, please refer to Ergon Energy's 2014–15 DMIA report.

8.1 AFLC/ZigBee Project

8.1.1 Project overview

This project is to investigate how the existing AFLC (Load Control) platform can be utilised in Demand Management. This project was a small scale trial to demonstrate the effectiveness of AFLC (Load Control) to ZigBee communication platform capabilities and to explore the capability of meters communicating with Demand Response Enabling Devices (DRED's). Energex claimed DMIA expenditure in 2014–15 of $36 361 for this project.

8.1.2 Assessment against DMIA criteria

Criteria #1 This project is to test a proof of concept which demonstrated the effectiveness of AFLC to ZigBee Device capabilities, as well as exploring the capability of Smart Meters to pair ZigBee DREDs.

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

Criteria #3 By testing the existing load control platform, Energex is investigating demand management effectiveness that may help avoid network augmentation.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

8.2 Customer Load Profile Market Segmentation Project

8.2.1 Project overview

This project aimed to inform the development of the demand tariff and Network Pricing Strategy. Energex engaged an external service provider to formulate residential customer load profiles, collated into identified low voltage (LV) customer market segments. Energex claimed DMIA expenditure in 2014–15 of $ 445 673 for this project.

8.2.2 Assessment against DMIA criteria

Criteria #1 This project aimed to inform the development of the demand tariff via formulating residential customer load profiles.

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

Criteria #3 This project aimed to inform the development of the demand tariff that may help avoid network augmentation.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

8.3 Energy Efficiency Research Project

8.3.1 Project overview

Energex engaged an external service provider to research the impact that energy efficiency gains have had on historical demand and the projected future impact on demand. The project aimed to produce a research report and model which would assist with forecasting network peak demand in the future, and inform future residential demand management programs on energy efficient technologies. Energex claimed DMIA expenditure in 2014–15 of $ 133 697 for this project.

8.3.2 Assessment against DMIA criteria

Criteria #1 The project aimed to produce a research report and model which would assist with forecasting network peak demand in the future, and inform future residential demand management programs on energy efficient technologies

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

Criteria #3 This project will assist with forecasting network peak demand in the future, and inform future residential demand management programs on energy efficient technologies, that may help avoid network augmentation.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

8.4 Residential Distributed Energy Resources Research Project

8.4.1 Project overview

This project aimed to produce a detailed forecast, report and model considering how widespread adoption of electrical vehicles and storage will impact residential demand and consumption across the Energex network to 2030.Energex claimed DMIA expenditure in 2014–15 of $ 378 687 for this project.

8.4.2 Assessment against DMIA criteria

Criteria #1 The project aimed to produce a research report and model which would assist forecasting network demand, and inform demand management programs on residential battery storage and electric vehicles in the future.

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

Criteria #3 This project will assist with forecasting network peak demand in the future and inform future residential demand management programs, that may help avoid network augmentation.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

8.5 Small to Medium Enterprises (SME) Demand Response Investigation Project

8.5.1 Project overview

This project aimed to identify the demand response potential from small to medium businesses (SMEs) in South East Queensland (SEQ) with the results informing the development of methodologies to support non-network assessments undertaken as part of applying the RIT-D. Energex engaged an external service provider to undertake customer research in the SME market to assess demand opportunities. Over 150 SME customers participated in the research across three target areas: Inner Brisbane, Northern end of the Gold Coast and Ipswich. Energex claimed DMIA expenditure in 2014–15 of $246 443 for this project.

8.5.2 Assessment against DMIA criteria

Criteria #1 The project aimed to produce a research report and model which would assist forecasting network demand, and inform demand management programs on residential battery storage and electric vehicles in the future.

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

Criteria #3 This project results will feed into the development of tools to assist in undertaking future non-network assessments when applying the RIT-D., that may help avoid network augmentation.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

9 Ergon Energy

Ergon Energy is claiming $850 672 and $747 283 DMIA expenditure for 10 and nine demand management projects for 2013–14 and 2014–15 respectively. We approve these expenditures as they meet the DMIA criteria. Five of these projects have received co-contributions from partners. Nine projects were continuing and six were new projects. The following section sets out our assessment of the individual projects. For more detailed information about these projects, please refer to Ergon Energy's 2013–14 and 2014–15 DMIA reports.

Projects undertaken for 2013–14 and 2014–15

9.1 GUSS Phase 2 (REGUSS)

9.1.1 Project overview

The goal of the project is to further develop the Grid Utility Support System (GUSS) – medium scale storage, grid interface inverter, system control and monitoring – to allow for the connection of renewable energy systems, in particular photovoltaics (PV), in such a way as to optimise the value the renewables can present, both to the network and to the customer. Ergon Energy claimed DMIA expenditure of $227 000 and $48 300 in 2013–14 and 2014–15 respectively for this project.

9.1.2 Assessment against DMIA criteria

Criteria #1 The REGUSS project specifically addresses integration of PV into Single Wire Earth Return (SWER) networks and enables the generation of PV energy to be stored and shifted to peak demand and network need times.

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

Criteria #3 This project optimises the value the renewables can present, both to the network and to the customer that may help avoid network augmentation.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

9.2 Urban Statcom

9.2.1 Project overview

The increasing prevalence of residential photovoltaic (PV) systems and non-linear loads is starting to have a significant impact on network and customer supply. These

impacts include over-voltage and voltage swings on the low voltage network, affecting customer loads, causing PV systems to trip off (reducing output) and necessitating (partially effective and expensive) network augmentation and potential restriction of PV system connection. This project laboratory tests and field trials two different products from different manufacturers in order to mitigate these problems including lower cost, more effective alternatives to network augmentation.

Product 1 is a single phase 10kVAR capacitive only type of unit, which can address out of balance voltages. Product 2 is a three phase 20kVAR Statcom that can act as both a capacitor and inductor.

Ergon Energy claimed DMIA expenditure of $218 000 and $73 800 in 2013–14 and 2014–15 respectively for this project.

9.2.2 Assessment against DMIA criteria

Criteria #1 This project provides solutions and products, including lower cost, more effective alternatives to network augmentation, to mitigate impacts from residential PV systems and non-linear loads.

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

Criteria #3 This project will lead to improved low voltage supply quality and allow for increasing amount of PV without the need for network augmentation.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

9.3 Large Statcom

9.3.1 Project overview

The Large LV Statcom project will trial a three-phase 300kVAR unit on the Ergon Energy network. The main application is to support the voltage on a long medium voltage rural feeder with voltage regulation issues, partially due to higher penetration of PV, and avoid the conventional network upgrade, which may otherwise be required.

Ergon Energy claimed DMIA expenditure of $144 600 and $27 800 in 2013–14 and 2014–15 respectively for this project.

9.3.2 Assessment against DMIA criteria

Criteria #1 The main application is to support the voltage on a long medium voltage rural feeder with voltage regulation issues, partially due to higher penetration of PV, and avoid the conventional network upgrade, which may otherwise be required.

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

Criteria #3 This project will support the voltage on a long medium voltage rural feeder with voltage regulation issues, and avoid the conventional network upgrade, which may otherwise be required.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

9.4 Customer PV Voltage Control

9.4.1 Project overview

The project aims to test and evaluate the suitability of using customer-owned inverters to self-manage their voltage levels on the LV network. The project has two main stages of the evaluation: fixed non unity power factor and dynamic control functionality.

Ergon Energy claimed DMIA expenditure of $135 000 and $63 300 in 2013–14 and 2014–15 respectively for this project.

9.4.2 Assessment against DMIA criteria

Criteria #1 The project aims to test and evaluate the suitability of using customer-owned inverters to self-manage their voltage levels on the LV network.

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

Criteria #3 This project aimed to avoid voltage rise issues using customer owned inverters with Reactive Power functionality to self-manage their voltage levels on the LV network and avoid expensive network upgrades.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

9.5 Control Solar Energy Management system

9.5.1 Project overview

This project represents development of a solar system with a Solar Energy Management (SEM) controller that is capable of continuous operation, overcoming solar intermittency, displacement of electrical consumption, increasing the penetration of cost-effective renewable energy technology, and providing reliable renewable energy.

Ergon Energy claimed DMIA expenditure of $30 500 and $30 200 in 2013–14 and 2014–15 respectively for this project.

9.5.2 Assessment against DMIA criteria

Criteria #1 As a utility energy management tool the system is capable of simultaneously satisfying both renewable energy supply and electricity network demand management objectives.

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

Criteria #3 This project will assist in determining the opportunity to develop a solution for residential air conditioning that removes the electrical demand from the distribution network when needed.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

9.6 Adaptive LED Streetlight Systems

9.6.1 Project overview

The Adaptive LED Streetlight Systems project will validate 'smart' lighting system performance in both laboratory and field conditions. This Adaptive LED Streetlight Systems project will validate their performance and builds off previous and recent trials. Successful completion of the project will lead to a deployable product that provides benefit to public lighting customers and Ergon Energy. This project aims to demonstrate the enhanced LED light control systems ability to further increase energy and demand savings, from 60% with its current LED luminaire to 80% with the adaptive light control system.

Ergon Energy claimed DMIA expenditure of $17 902 and $90 900 in 2013–14 and 2014–15 respectively for this project.

9.6.2 Assessment against DMIA criteria

Criteria #1 This project will lead to a deployable product that provides benefit to public lighting customers and Ergon Energy.

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

Criteria #3 This project will demonstrate the enhanced LED light control systems ability to further increase energy and demand savings.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

Projects undertaken for 2013–14

9.7 Smart Voltage Regulator Validation

9.7.1 Project overview

The Smart Voltage Regulator (SVR) Validations project will laboratory test the effectiveness of three phase SVRs in maintaining distribution network power quality in light of increasing penetration of renewable generation. A staged process is proposed to effectively assess the SVR and enable an informed commercial decision to be made.

Ergon Energy claimed DMIA expenditure of $47 000 in 2013–14 for this project.

9.7.2 Assessment against DMIA criteria

Criteria #1 This project will laboratory test the effectiveness of three phase SVRs in maintaining distribution network power quality in light of increasing penetration of renewable generation.

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

Criteria #3 This project aimed to maintain distribution network power quality in light of increasing penetration of renewable generation

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

9.8 Network Embedded Solar Thermal

9.8.1 Project overview

The Network Embedded Solar Thermal (NEST) project quantified the key economic benefits that may arise from developing Concentrating Solar Thermal (CST) electricity generation in the distribution network, namely the potential network benefits in grid constrained areas, and the employment that could ensue from CST development, with the correct policy settings. The project further developed some of the specific issues raised in the Australian Solar Institute's (ASI) Review of the Potential for Concentrated Solar Power (CSP) in Australia. The project also focused on the considerable barriers that network connection may pose to CST development and potential macro-economic benefits of CST development.

Ergon Energy claimed DMIA expenditure of $2 000 in 2013–14 for this project.

9.8.2 Assessment against DMIA criteria

Criteria #1 This project identifies network constraints in Ergon Energy area and other locations across the National Electricity Market (NEM) capable of supporting solar thermal solutions.

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

Criteria #3 This project aimed to quantify the key economic benefits that may arise from developing Concentrating Solar Thermal (CST) electricity generation in the distribution network, namely the potential network benefits in grid constrained areas. This may lead to the delay of network augmentation.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

9.9 Cool Roof Trial

9.9.1 Project overview

This is a collaborative project with industry partners and Queensland University of Technology (QUT), bringing together multidisciplinary expertise in the electricity sector, infrastructure, scientific testing and modelling, in developing a roof coating system that maximises energy and demand reductions for customers.

Ergon Energy claimed DMIA expenditure of $23 000 in 2013–14 for this project.

9.9.2 Assessment against DMIA criteria

Criteria #1 The trial aims to develop a scientifically valid testing regime that validates the performance of cool roof products, and quantifies the energy and demand reductions with prescribed confidence.

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

Criteria #3 This project aimed to develop a roof coating system that maximises energy and demand reductions for customers, which may lead to the defer of network augmentation.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

9.10 QUT Super Conductor

9.10.1 Project overview

This is a pilot study of a High Temperature Superconducting (HTS) power cable which has the potential to significantly increase network capacity and flexibility by replacing conventional electrical assets with new cryogenic technology. Ergon Energy claimed DMIA expenditure of $5 000 in 2013–14 for this project.

9.10.2 Assessment against DMIA criteria

Criteria #1 This technology has the potential to increase network capacity and flexibility and reduce the frequency of network augmentation.

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

Criteria #3 This is a trial of an innovative technology that has the potential to better manage demand.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

Projects undertaken for 2014–15

9.11 LED Streetlight Removing Barriers

9.11.1 Project overview

This project seeks to take an innovative approach by identifying actions focused on mitigating the financial, regulatory and technical barriers to large scale deployment. The project will enable effective markets and efficient services by developing solutions to enable Ergon Energy to significantly reduce cost, peak demand, network constraints, increased infrastructure requirements, energy use and carbon emissions from the provision of street lighting,

Ergon Energy claimed DMIA expenditure of $164 700 in 2014–15 for this project.

9.11.2 Assessment against DMIA criteria

Criteria #1 This project established opportunity for demand reduction through enabling the use of LED streetlights.

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

Criteria #3 This is an approach that has the potential to better manage demand.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

9.12 Centralised Energy Storage System

9.12.1 Project overview

This project will initially develop and evaluate a 100kW/200kWh Centralised Energy Storage System (CESS). The system will be tested, trialled and integrated in a controlled, generation test environment in the workshops to develop functionality and verify its effectiveness and reliability. Ergon Energy claimed DMIA expenditure of $207 300 in 2014–15 for this project.

9.12.2 Assessment against DMIA criteria

Criteria #1 This project enables higher penetrations of customer-owned renewable generation and also develop micro-gridding functionality.

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

Criteria #3 This project enables higher penetrations of PV on the network using centralised energy storage.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

9.13 Demand Response System

9.13.1 Project overview

This was a capability enablement project to take the findings from previous Automated Demand Response project and develop the business as usual approach for applying the learnings. The project sought to establish, at a minimum the tendering and purchasing of a demand response system and was funded via DIMA under the category of capability enablement.

Ergon Energy claimed DMIA expenditure of $41 100 in 2014–15 for this project.

9.13.2 Assessment against DMIA criteria

Criteria #1 Automatic load control reduces demand at peak times and helps avoid the need for network augmentation.

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

Criteria #3 This project increases Ergon Energy's demand management capacity.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

10 SA Power Networks

We approve DMIA expenditure of $1 433 000 for three projects in 2013–14 and $1 777 000 for four projects in 2014–15 because they meet the DMIA criteria. The following section sets out our assessment of the individual projects. For more detailed information about these projects, please refer to SA Power Networks' 2013–14 and 2014–15 DMIA reports.

10.1 DM - Smart Grid Tariff Trial

10.1.1 Project overview

This trial was undertaken in order to investigate customer reaction to the application of a capacity based tariff, how customers might respond to this form of charge and what role in home displays (IHD) might play.

SA Power Networks claimed DMIA expenditure of $92 000 in 2013–14 for this project.

10.1.2 Assessment against DMIA criteria

Criteria #1 The trial provided valuable customer response and demand profiles that further informed the capacity tariff design and refined the timing and duration of the peak demand period for the tariff. Evaluation of customer behavioural responses also resulted in changes to the implementation plan for the tariff.

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

Criteria #3 This project increases demand management capacity.

Criteria #4 Tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

10.2 DSP Trial 2

10.2.1 Project overview

This trial built on the DM - Smart Grid Tariff Trial discussed in section 1, and was required in order to be able to understand, with a statistically valid sample, how many customers may be prepared to take up a capacity tariff, if the tariff were voluntary, and the likelihood of those customers being able to respond in ways that reduced their electricity bills.

SA Power Networks claimed DMIA expenditure of $449 000 in 2013–14 for this project.

10.2.2 Assessment against DMIA criteria

Criteria #1 This trial aimed to determine the proportion of customers willing to take up the tariff voluntarily and how (and if) their energy demand patterns might change should they wish to take up the offer.

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

Criteria #3 This project increases demand management capacity.

Criteria #4 Tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

10.3 DSP Trial 3 - Residential Load Profiles

10.3.1 Project overview

This project installed interval metering at selected sites within a representative metropolitan area which were identified as sites falling within the five customer tranches designated for tariff investigation. The aim of the trial was to collect interval data that would allow further tariff development and load profiling for the designated customer tranches.

SA Power Networks claimed DMIA expenditure of $892 000 in 2013–14 and $262 000 in 2014–15 for this project.

10.3.2 Assessment against DMIA criteria

Criteria #1 The data collected enables analysis of tariff impacts on the designated customer tranches so as to further inform on the capacity tariff design and its application. Further analysis remains to be undertaken and may assist in targeting customers that would be best suited to the tariff.

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

Criteria #3 This project increases demand management capacity.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

10.4 DM – Bordertown Demand Management

10.4.1 Project overview

This project was undertaken in order to address the forecast network capacity constraint at the Bordertown 33/11kV substation and Keith-Bordertown 33kV sub-transmission line. The project involved the connection and on-going payment (for network support) of a 3rd party generator installed by Vibe Energy at Bordertown. This generator provides peak-lopping to defer the capital works to upgrade the network in the region.

SA Power Networks claimed DMIA expenditure of $990 000 in 2014–15 for this project.

10.4.2 Assessment against DMIA criteria

Criteria #1 This project aimed to defer the implementation of a network solution. The project also aimed to provide learnings by undertaking a practical implementation of a non-network third-party solution to a network constraint.

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

Criteria #3 This project defers the implementation of a network solution.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

10.5 Grid Side Storage

10.5.1 Project overview

This is a practical research study into the performance of energy storage systems across the likely applications within the distribution network. With the increasing amount of Energy Storage System technologies and their applications this project will produce a mobile testing environment to further develop these technologies and to understand their use in Australian conditions. The project will create a knowledge base for industry and system developers whilst also providing for advanced training facilities on an operational system.

SA Power Networks claimed DMIA expenditure of $287 000 in 2014–15 for this project.

10.5.2 Assessment against DMIA criteria

Criteria #1 This project will provide insight into the suitability and performance of different technologies when utilised in the most likely scenarios for distribution network management and operation.

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

Criteria #3 This project provides study into the performance of energy storage systems.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

10.6 Future Network Modelling

10.6.1 Project overview

To further understand energy storage impacts on the distribution network so as to allow network operations and design to accommodate these systems SA Power Networks has undertaken a comprehensive modelling project.

SA Power Networks claimed DMIA expenditure of $287 000 in 2014–15 for this project.

10.6.2 Assessment against DMIA criteria

Criteria #1 This modelling will provide insights into the rate of take up of distributed energy resources based on the costs of those resources and the economic returns to the customer. It will also enable insights into the likely impacts on network load profiles

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

Criteria #3 This project provides study into the impacts of energy storage systems, which will assist SA Power Networks in demand management.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

11 CitiPower

CitiPower is claiming 2014 DMIA expenditure for five demand management projects totalling $ 403 930. We approve this expenditure as it meets the DMIA criteria. The following section sets out our assessment of the individual projects. For more detailed information about these projects, please refer to CitiPower's 2014 DMIA report.

11.1 Network Support WMTS 2013/14 Summer

11.1.1 Project Overview

The project was a trial of an inner urban location demand side initiative, which had the effect of deferring capital expenditure. This was a network support project which involved an existing embedded generator operating 2 x 6MW gas fired generators. A network support agreement was established to enable these generators to provide coincidental capacity support to the Bouverie St zone substation which supplies Carlton, parts of North Melbourne and the northern fringe of the Melbourne CBD. CitiPower claimed DMIA expenditure in 2014 of $ 105 000 for this project.

11.1.2 Assessment against DMIA criteria

Criteria #1 This is met because it's a network support measure undertaken by CitiPower to meet customer demand via enabling an existing embedded generator to provide coincidental capacity support. The project enables deferment of the requirement of a network augmentation.

Criteria #2 This is met because this network support agreement enables these generators to provide coincidental capacity support to the Bouverie St zone substation which supplies Carlton, parts of North Melbourne and the northern fringe of the Melbourne CBD.

Criteria #3 This is met because this project provides experience of engaging with an embedded generator for network support including the performance of the local generator from an operational perspective, the time taken to establish an agreement contract as well as the terms and conditions and expected approximate cost for future support;

Criteria #4 Non-tariff based.

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex.

11.2 Jacobs Fault Level Mitigation Study Scope #1

11.2.1 Project Overview

The project was to explore opportunities within the CitiPower network to examine wider network and transmission solutions to resolve inherent fault level issues within the CBD and permit additional embedded generation connections as potential non-network solutions to existing and forecast capacity constraints. The project assessed the indicative fault level headroom across the CitiPower distribution network within the Melbourne CBD originating from four terminal stations. CitiPower claimed DMIA expenditure in 2014 of $ 95 804 for this project.

11.2.2 Assessment against DMIA criteria

Criteria #1 This is met because the project facilitates additional embedded generation connections as potential non-network solutions to existing and forecast capacity constraints.

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

Criteria #3 This is met because it enables CitiPower to gain a better understanding of the existing transmission imposed network constraints and possible solutions to accommodate future additional embedded generators onto the network. This could offer non-network solutions to existing and forecast fault level constraints.

Criteria #4 Non-tariff based.

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex.

11.3 Jacobs Fault Level Mitigation Study Scope #2

11.3.1 Project Overview

The project was to develop a strategy to mitigate fault levels at constrained network locations. The aim was to develop a generic strategy that could be applied to resolve any future fault level constraints on the network to facilitate future additional embedded generation connections as potential non-network solutions to existing and forecast capacity constraints. CitiPower claimed DMIA expenditure in 2014 of $138 900 for this project.

11.3.2 Assessment against DMIA criteria

Criteria #1 This is met because the project facilitates additional embedded generation connections as potential non-network solutions to existing and forecast capacity constraints.

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

Criteria #3 This is met because it enables CitiPower to gain a better understanding of future network availability and establish a strategy which recommends preferred distribution network solutions to accommodate future additional embedded generators onto the network to potentially offer non-network solutions to existing and forecast capacity constraints.

Criteria #4 Non-tariff based.

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex.

11.4 AEMO Data provision (Supports Jacobs Fault Level Mitigation Study)

11.4.1 Project Overview

The transmission system data provision to Jacobs Consulting enabled commencement of scope #1 of their CitiPower Fault Level Mitigation Study. CitiPower claimed DMIA expenditure in 2014 of $ 1 900 for this project.

11.4.2 Assessment against DMIA criteria

Criteria #1 This is met because the project enables commencement of the scope #1 of their CitiPower Fault Level Mitigation Study, which facilitates additional embedded generation connections as potential non-network solutions to existing and forecast capacity constraints.

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

Criteria #3 This is met because the project enables commencement of the scope #1 of their CitiPower Fault Level Mitigation Study.

Criteria #4 Non-tariff based.

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

11.5 Storage Investment Framework Design and Analysis

11.5.1 Project Overview

This project involved three main development areas for application of energy storage for demand management:

- End-user off gridding
- Cold thermal energy storage
- Grid Level energy storage on the grid

CitiPower claimed DMIA expenditure in 2014 of $ 1 900 for this project.

11.5.2 Assessment against DMIA criteria

Criteria #1 Non-network in nature through investigating alternative supply options for suitable customers, load shifting and peak curtailment providing alternative means of meeting demand.

Criteria #2 Program addresses peak demand management and broad-based demand management through identifying best cases for the application of thermal storage, off gridding and network based storage.

Criteria #3 The project builds knowledge and capability to efficiently deploy demand management solutions relevant to the network.

Criteria #4 Program is non-tariff based.

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

12 Jemena Electricity Networks

Jemena is claiming 2014 DMIA expenditure for two demand management projects totalling $63 864. We approve this expenditure as it meets the DMIA criteria. The following section sets out our assessment of the individual projects. For more detailed information about these projects, please refer to Jemena's 2014 DMIA report.

12.1 Demand Response Field Trial _ Phase 1

12.1.1 Project Overview

Jemena has initiated a Demand Response Field Trial (DRFT) project to develop its understanding of the benefits, costs, pricing / commercial arrangements and operational structures of customer controlled demand response (DR) programs. Phase 1 of the trial includes model development and desktop analysis and was completed in January 2015. Jemena claimed DMIA expenditure in 2014 of $26 325 for this project.

12.1.2 Assessment against DMIA criteria

Criteria #1 The project is aimed at developing Jemena's capabilities to reduce peak demand through customer controlled demand response projects, rather than increasing supply capacity through network augmentation.

Criteria #2 The project is a peak demand management initiative which aims to address specific network constraints by reducing demand on the network at the location and time of the constraint.

Criteria #3 The project deliverables are to prepare Jemena for various elements of customer controlled demand response programs as an effective and efficient demand management solution.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

12.2 Impact of the Energy Portal

12.2.1 Project Overview

Following on from the release of the Energy Portal to Jemena customers in June 2012, Jemena undertook an initiative in 2013 and 2014 to understand the impact of the Energy Portal on customers' electricity consumption.

Jemena seeks approval for costs associated with the continued engagement of a contract analyst in the 2014 Regulatory Year to assess the capabilities of the Energy Portal as a demand management tool and to promote the portal to its customers. Jemena claimed DMIA expenditure in 2014 of $ 37 539 for this project

12.2.2 Assessment against DMIA criteria

Criteria #1 The project has the potential to provide demand management capabilities through promoting portal use among Jemena's customers and giving them the tools to manage their demand.

Criteria #2 The project is a broad based demand management initiative targeted at consumers with smart meters, and is not aimed at a specific location on the network.

Criteria #3 The project is an initiative designed to explore customers' response to smart metering information and price signals.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

13 Powercor

Powercor is claiming 2014 DMIA expenditure for five demand management projects totalling $230 614. We approve this expenditure as it meets the DMIA criteria. The following section sets out our assessment of the individual projects. For more detailed information about these projects, please refer to Powercor's 2014 DMIA report

13.1 Network Support CTN and Network Support BMH.

13.1.1 Project Overview

These are network support projects which were deployed to inject electrical power into the CTN and BMH 22kV feeder networks in Western Victoria. The projects included 1250kVA and 350kVa portable generators and included supply and lease of equipment, labour and fuel. The purpose of the projects was to trial embedded generator support to areas where Powercor expects future supply constraints.

Powercor advised that the project has been proven to be successful in terms of construction and control. It can now implement the solution in a short period of time, if such need arose quickly due to rapid load growth. Powercor claimed DMIA expenditure in 2014 of $ 43 439 for this project.

13.1.2 Assessment against DMIA criteria

Criteria #1 These are network support projects which enable deferment of a network augmentation when unpredictable loading materialises.

Criteria #2 These network support projects can be used in broad-based demand and peak demand management program.

Criteria #3 These projects provides experience and operational capability for network support. Remote control techniques and remote monitoring were tested to reduce fuel and labour costs while improving response.

Criteria #4 Non-tariff based.

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

13.2 Greensync pilot of residential DM in the Werribee area

13.2.1 Project Overview

This project involved collecting load and customer information to identify areas for possible deployment of DM and analysing the data to identify the justification process to enable future use of DM to defer capital expenditure. Powercor claimed DMIA expenditure in 2014 of $ 18 500 for this project.

13.2.2 Assessment against DMIA criteria

Criteria #1 This is project aims to identify the justification process to enable future use of DM to defer capital expenditure.

Criteria #2 This project can be used in broad-based demand and peak demand management program.

Criteria #3 This project provides benefits in the form of a possible future DM project to defer capital expenditure.

Criteria #4 Non-tariff based.

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

13.3 Demand Management Storage Project

13.3.1 Project Overview

The purpose of the project is to trial and evaluate the capability of an embedded grid scale energy storage system (GESS). Powercor claimed DMIA expenditure in 2014 of $ 106 349 for this project.

13.3.2 Assessment against DMIA criteria

Criteria #1 This project is non-network in nature, load shifting and peak curtailment providing alternative means of meeting demand.

Criteria #2 This program addresses peak demand management.

Criteria #3 This project aims to build CP&PAL capability to build a business case, procure and operate grid energy storage.

Criteria #4 Non-tariff based.

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

13.4 Storage Investment Framework Design and Analysis

13.4.1 Project Overview

This project involved three main development areas for application of energy storage for demand management:

- End-user off gridding
- Cold thermal energy storage
- Grid Level energy storage on the grid

Powercor claimed DMIA expenditure in 2014 of $ 62 326 for this project.

13.4.2 Assessment against DMIA criteria

Criteria #1 Non-network in nature through investigating alternative supply options for suitable customers, load shifting and peak curtailment providing alternative means of meeting demand.

Criteria #2 Program addresses peak demand management and broad-based demand management through identifying best cases for the application of thermal storage, off gridding and network based storage.

Criteria #3 The project builds knowledge and capability to efficiently deploy demand management solutions relevant to the network.

Criteria #4 Non-tariff based.

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

14 AusNet Services

AusNet Services is claiming 2014 DMIA expenditure for four demand management projects totalling $2 633 921. We approve this expenditure as it meets the DMIA criteria. The following section sets out our assessment of the individual projects. For more detailed information about these projects, please refer to AusNet Services' 2014 DMIA report.

14.1 Residential Battery Storage Trial

14.1.1 Project Overview

AusNet Services' Residential Battery Storage Trial investigates the capability of battery and inverter systems connected to consumer homes to reduce residential peak demand. The systems are fully programmable and can be remotely controlled by AusNet Services.

The battery systems are capable of shifting customer demand from peak to off-peak times by discharging whenever the customer's instantaneous demand is high, and by re-charging overnight when the customer's demand is low, or recharging using excess solar generation. The flexibility provided by the programmable inverter makes this type of system capable of both addressing specific network constraints and providing broad-based demand management across the network if rolled-out in sufficiently large numbers. AusNet Services claimed DMIA expenditure in 2014 of $174 416 for this project.

14.1.2 Assessment against DMIA criteria

Criteria #1 The battery systems are intended to shift customer demand from peak to off-peak times by discharging whenever the customer's instantaneous demand is high, and by re-charging overnight when the customer's demand is low.

Criteria #2 This is a peak demand management program.

Criteria #3 This trial will explore how battery storage at the residential level can be used for peak demand management to defer network augmentation as well as developing key insights into how electric vehicles may interact with the network in the future.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex and Capex

14.2 Grid Energy Storage System (GESS) Trial

14.2.1 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 re-charging overnight when the feeder demand is low. In practice, the GESS is suited to addressing a specific network constraint and is containerised to allow portability to different locations as required. AusNet Services claimed DMIA expenditure in 2014 of $2 437 495 for this project.

Criteria #1 AusNet Services is exploring grid connected storage to manage network demand and to defer augmentation works until a clear demand growth trend emerges guaranteeing higher level of asset utilisation.

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 help to establish whether battery storage is a credible non network solution to managing demand and set the parameters around when it can be economically deployed for the benefit of energy consumers.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex and Capex

14.3 Mallacoota Sustainable Energy Study

14.3.1 Project Overview

AusNet Services has partnered with the Mallacoota community through the Mallacoota Sustainable Energy Group (MSEG) and the East Gippsland Shire Council (EGSC) to investigate non-network alternative electricity supplies to the Mallacoota community.

During 2014, AusNet Services contributed to funding a consultancy to prepare a feasibility study into distributed electricity supply options that provide improved reliability of supply to customers and incorporate sustainable generation technologies. AusNet Services' claimed DMIA expenditure in 2014 of $22 010 for this project.

14.3.2 Assessment against DMIA criteria

Criteria #1 By meeting customer demand via a mini-grid, reliance on bulk network supply is reduced.

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

Criteria #3 This innovative technology is being trialled in anticipation of lower battery prices in future. Large battery systems offer demand levelling and voltage support services which can defer asset investment as well as improve the quality of supply to customers.

Criteria #4 Non-tariff based

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

15 United Energy

United Energy is claiming 2014 DMIA expenditure for three demand management projects totalling $ 661 715. We approve this expenditure as it meets the DMIA criteria. The following section sets out our assessment of the individual projects. For more detailed information about these projects, please refer to United Energy's 2014 DMIA report.

15.1 District Energy Services Scheme (DESS) Project

15.1.1 Project Overview

In August 2011, United Energy (UE) formalised 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 Zone. The MoU has allowed United Energy 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. The MoU expired in 2014 and as such UE and Council have renewed the MoU for another five year term.

United Energy 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 in instances when external consulting resources were required for the development of the project. United Energy claimed DMIA expenditure in 2014 of $12 975 for this project.

15.1.2 Assessment against DMIA criteria

Criteria #1 One of the objectives of the DESS is to defer the proposed network augmentation of establishing Templestowe Zone Substation.

Criteria #2 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.

Criteria #3 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.

Criteria #4 Non-tariff based.

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

15.2 Virtual Power Plant (VPP) Project

15.2.1 Project Overview

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. United Energy claimed DMIA expenditure in 2014 of $597,270 for this project.

15.2.2 Assessment against DMIA criteria

Criteria #1 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.

Criteria #2 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.

Criteria #3 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.

Criteria #4 Non-tariff based.

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

15.3 Summer Saver (Demand Response) Trial

15.3.1 Project Overview

The 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. 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. United Energy claimed DMIA expenditure in 2014 of $51,470 for this project.

15.3.2 Assessment against DMIA criteria

Criteria #1 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.

Criteria #2 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.

Criteria #3 Since UE's network is predominantly metropolitan demand management such as demonstrated by this trial is a crucial option to be explored.

Criteria #4 Non-tariff based.

Criteria #5 This criteria is met because expenditure for this project cannot be 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 Opex

16 TasNetworks

TasNetworks is claiming 2014 DMIA expenditure for three demand management projects totalling $ 49 717. We approve this expenditure as it meets the DMIA criteria. The following section sets out our assessment of the individual projects. For more detailed information about these projects, please refer to TasNetworks' 2014 DMIA report.

16.1 Direct load control of uncontrolled hot water heating

16.1.1 Project overview

The purpose of this project is the development of a Hot Water Demand Evaluation Tool in order to provide the capability to accurately model and predict the extent of demand reduction (both by location and demographics) that may be achieved through the control of residential electric storage hot water systems. TasNetworks claimed DMIA expenditure in 2013–14 of $20 000 for this project.

16.1.2 Assessment against DMIA criteria

Criteria #1 This project meets this requirement as it is part of a wider initiative to help manage load issues due to domestic hot water heating which in turn will lower peak demand in Tasmania and thus, reduce the need for network augmentation.

Criteria #2 This is a peak demand management project.

Criteria #3 This project satisfies this condition as it explores a potentially efficient demand management mechanism (reducing the impact of hot water systems at times of peak demand through load control).

Criteria #4 Non-tariff based

Criteria #5 This criterion is met because expenditure for this project cannot be 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 Opex

16.2 Battery storage and embedded generation on Bruny Island

16.2.1 Project overview

The purpose of this project was to research and model an integrated solution of load management, energy storage, static voltage control and backup diesel generation, to address a specific area of the distribution network (Bruny Island) that has limited

capability to meet required service levels. The integrated solution provides capability to allow modelling the connection of renewable energy resources, such as wind and solar, to determine impacts on system performance. TasNetworks claimed DMIA expenditure in 2013–14 of $20 000 for this project.

16.2.2 Assessment against DMIA criteria

Criteria #1 This project meets the criteria because it seeks to better integrate non-network solutions to help address capacity constraints in the distribution network (rather than relying on network augmentation).

Criteria #2 This is a peak demand management project.

Criteria #3 This project meets the criteria as it explores the use of newer technologies such as battery storage and embedded generation in order to manage network demand.

Criteria #4 Non-tariff based

Criteria #5 This criterion is met because expenditure for this project cannot be 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 Opex

16.3 Commercial and industrial peak demand reduction

16.3.1 Project overview

This project entails the execution of a state-wide Commercial and Industrial (C&I) load survey to identify the characteristics of the principal C&I customers (and customer groups) connected to the distribution network. The survey will also identify the demand management potential which may be realised by C&I customers. This survey will be used to determine the ultimate scope of the C&I demand management program and the benefits which could be realised from the program. TasNetworks claimed DMIA expenditure in 2013–14 of $9 717 for this project.

16.3.2 Assessment against DMIA criteria

Criteria #1 This project meets this requirement because it investigates the scope of reducing peak demand for standard control services from commercial and industrial customers.

Criteria #2 This is a peak demand management project.

Criteria #3 This project meets this requirement as it is designed to build demand management capability and capacity through understanding the scope for peak demand reduction of commercial and industrial customers.

Criteria #4 Non-tariff based

Criteria #5 This criterion is met because expenditure for this project cannot be 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 Opex