

# Report on Demand Management Projects for FY 2009/10

Annual submission to AER

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## 1 Summary

This submission of Demand Management Information (DM Information) to the Australian Energy Regulator (AER) is made in accordance with the AER's Final Decision, *New South Wales distribution determination 2009-10 to 2013-14, 28 April 2009* (the 2009 Determination).

The DM Information sets out Integral Energy's costs incurred, and revenue foregone, as a result of Demand Management measures implemented up to FY2009/10. Once assessed and approved by the AER these costs will be used to calculate the D-factor for 2011/12 distribution prices.

Integral Energy notes that these costs are above the threshold at which the DNSP may defer the "DM Cost Pass Through Amount" (see Table 1.1 below).

Integral Energy requests that this submission be kept confidential.

<b>Materiality test for deferral</b>	
<b>Definition</b>	$\frac{\text{DM Cost Pass Through Amount (t)}}{\text{SRR (t-1) - AF Revenue (t-2)}} < 0.001$
<b>Parameter values</b>	
DM Cost Pass Through Amount (t) (2011/12)	Integral Energy has calculated the total DM Cost Pass Through Amount for 2011/12 at \$4,634,400 (\$2011/12).  This amount includes Non-Tariff DM Costs of \$935,058 (\$2009/10), Tariff DM Costs of \$4,930 (\$2009/10), Foregone Revenue of \$2,888,702 (\$2009/10) and an amount for the Time Value of Money of \$805,710 (\$2011/12) to cover the holding costs on the above amounts.
SRR (t-1) (2010/11)	\$828.4 million
AF Revenue (t-2) (2009/10)	Integral Energy has calculated the AF Revenue at \$2,888,702
Materiality factor	0.00561 > 0.001
<i>Table 1.1 – Materiality test.</i>	

Integral Energy estimates the D-factor for 2011/12 to be:

$$D_{t+1} = \frac{\text{DM cost pass through amount}_{t+1}}{\text{SRR}_t - \text{AF revenue}_{t-1}} - \frac{\text{DM cost pass through amount}_t}{\text{SRR}_{t-1} - \text{AF Revenue}_{t-2}}$$

$$D_{2011/12} = \frac{\$k 4.634}{\$k 828.400 - \$k 2.889} - \frac{\$k 5.003}{\$k 749.900 - \$k 1.920}$$

$$\underline{D_{2011/12} = -0.001}$$

## 2 Submission context and structure

### 2.1 AER requirements for reporting on demand management

This report and information has been prepared in accordance with the 2009 Determination which sets out the requirements for DNSPs on “Demand management reporting and the setting of “D” factors”.

The detailed information to be provided under the Determination includes information on the demand management measures, the costs associated with implementation and the revenue foregone as a result of the demand management activity.

### 2.2 Integral Energy’s demand management measures

Integral Energy has an active demand management program and considers demand management measures as part of its annual asset management and planning process.

The D factor provisions relate to network demand management measures. In 2009/10 Integral Energy had 16 non tariff and one tariff demand management measures relevant to this submission. One tariff measure and 8 non tariff measures were active during 2009/10. A description of each measure is provided below in Table 2.1.

Measure	Description
Chipping Norton	<p>An RFP was issued to the market for provision of Demand Management Services for the Chipping Norton industrial and surrounding area on 19 November 2007. Parsons Brinckerhoff (PB) was selected via this selective tendering process to approach customers, perform free level 1 audits and implement approved DM initiatives. In addition to the audit Integral provides financial assistance to implement DM initiatives identified based on the achievable demand reduction.</p> <p>This program has achieved 2.03 MVA in load reduction.</p>
Windsor/Richmond	<p>This program commenced in 2008/09 with two service providers, Parsons Brinckerhoff and Energetics, selected via a Request for Quotes process to approach customers, perform free level 1 audits and implement approved DM initiatives. The target area encompasses both Windsor and Richmond commercial and industrial areas.</p> <p>This program has achieved 0.73 MVA of load reduction.</p>
Liverpool	<p>Asset Technologies Pacific was selected via a public tendering process to approach customers, perform free level 1 audits and implement approved DM initiatives. The target area is the Liverpool CBD and surrounding industrial area.</p> <p>The Liverpool program has achieved 5.23 MVA of load reduction.</p>
Parramatta	<p>Total Energy Solutions was engaged through a competitive process to provide DM services for this project. They approached customers, performed free level 1 audits and implemented approved DM initiatives. The target area is the Parramatta CBD and surrounding area.</p>

Measure	Description
	<p>This program has achieved peak load reductions of 4.63 MVA.</p> <p>The Parramatta DM program has been extended to achieve an additional 2 years of deferral of the proposed supply-side augmentation.</p>
Minto	<p>The Minto DM program was approved for implementation in 2006/07 with Parsons Brinkerhoff being selected via a public tendering process to approach customers, undertake DM investigations and implement any cost-effective opportunities identified.</p> <p>The demand management initiatives identified and implemented in the Minto industrial area have provided a total of 4.19 MVA of peak load reduction capacity.</p>
Bawley Point	<p>This DM program was approved for implementation during 2007/08 and designed to reduce peak demand during holiday periods at a South Coastal holiday area.</p> <p>The total demand reduction achieved was 1.3MVA using an embedded generator.</p>
Granville	<p>An RFP was issued to the market for provision of Demand Management Services for the Granville industrial/commercial and surrounding area on 4 November 2009. Parsons Brinckerhoff (PB) was selected via this selective tendering process to approach customers, perform free level 1 audits and implement approved DM initiatives. In addition to the audit Integral provides financial assistance to implement DM initiatives identified based on the achievable demand reduction.</p>
Rooty Hill	<p>An RFP was issued to the market for provision of Demand Management Services for the Rooty Hill/Glendenning industrial and surrounding area on 19 November 2008. Parsons Brinckerhoff (PB) was selected via this selective tendering process to approach customers, perform free level 1 audits and implement approved DM initiatives. In addition to the audit Integral provides financial assistance to implement DM initiatives identified based on the achievable demand reduction.</p>
Rooty Hill Tariff	<p>As part of the industrial area DM program, Integral implemented two residential DM initiatives as a component of the entire Rooty Hill DM Program. One measure was the CoolSaver program in which Integral remunerate customers for being allowed to reduce the energy consumption of their air conditioners during peak times. The second measure was to remunerate customers for voluntarily reducing energy consumption during peak times known as PeakSaver. A notification system was required for PeakSaver. Both measures require marketing and the installation of equipment at the residential customers' premises.</p>
Castle Hill	<p>The Sustainable Energy Development Authority (SEDA) formed a strategic alliance with Integral Energy to deliver DM measures that could defer the need to invest in additional network capacity in the Castle Hill Zone Substation (ZS) supply area for up to three years.</p>

Measure	Description
	<p>Asset Technologies Pacific was retained by SEDA to identify, implement, and monitor/verify energy efficiency and peak demand reduction projects encompassing measures such as lighting retrofits, HVAC upgrades, car park ventilation optimization and compressor optimisation.</p> <p>This DM program concluded in 2006/07 after achieving 0.902MVA in peak load reduction.</p>
Nowra	<p>Energy Conservation Systems was engaged through a competitive process to provide DM services for this project. They approached customers, performed free level 1 audits and implemented approved DM initiatives. The target area is the Nowra Commercial Centre and surrounding areas.</p> <p>The Nowra DM program concluded in 2006/07 after achieving 0.44MVA in peak load reduction.</p>
Westmead	<p>An agreement between Integral Energy and Sydney West Area Health Service was put in place to implement energy and demand saving initiatives with all initiatives implemented at Westmead Hospital. The customer received \$80/kVA for permanent demand reduction.</p> <p>The program concluded in 2007/08 after achieving 1.825MVA in peak load reduction.</p>
Wetherill Park	<p>Parsons Brinckerhoff was engaged through a competitive process to provide DM services for this project. They approached customers, performed free level 1 audits and implemented approved DM initiatives. The target area was the Wetherill Park Industrial area.</p> <p>The Wetherill Park DM program was concluded in 2006/07 after achieving a total peak load reduction of 5.51MVA.</p>
Campbelltown	<p>Big Switch Projects was selected via a public tendering process to approach customers, performing free level 1 audits and implement approved DM initiatives. The target area is the Campbelltown CBD and surrounding industrial areas.</p> <p>This program concluded on 31 March 2009 having achieved a total of 4.0MVA in load reduction.</p>
Unanderra	<p>Energetics was selected via a competitive tendering process to approach customers, perform free level 1 audits and implement approved DM initiatives.</p> <p>This program concluded in 2008/09 after achieving a total of 2.8MVA in load reduction.</p>
Leabons Lane (Commercial and Blacktown Solar Cities (BSC) non tariff residential)	<p><i>Commercial Measure:</i> The Leabons Lane (Blacktown) program was initiated in 2004/05. Two companies, Big Switch Projects and Energy Conservation Systems, were chosen to approach customers, perform free level 1 energy audits and implement approved DM measures in the Leabons Lane ZS supply area.</p>

Measure	Description
	<p>This program concluded on 2008/09 after achieving 4.1MVA in peak load reduction.</p> <p><i>BSC Residential Measures:</i> In November 2006, Blacktown became the third 'Solar City' to be announced in Australia. The Blacktown Solar City consortium includes: BP Solar, Integral Energy, Landcom, ANZ, Big Switch Projects and Blacktown City Council. The consortium launched a wide range of initiatives to promote sustainable energy use in Blacktown. To date, these include: a) the installation of over one megawatt (MW) of solar PV technology; b) 2,000 solar hot water systems; c) 30,000 energy efficiency packs; d) 1,400 demand management measures; e) 500 standby power reports; f) 1,000 household pricing trials; g) 3,500 energy consultations, and h) 4,000 smart meters.</p> <p>Integral Energy's role in assisting the implementation of the BSC program has included: free home energy audits; distribution and installation of free energy efficiency packs containing compact fluorescent light bulbs (CFLs) and flow-restricting showerheads. These non Tariff demand management measures aimed at reducing residential peak demand load by approximately 0.6MVA at Leabons Lane zone substation (ZS).</p> <p>The reductions achieved by the BSC Residential Measures at Leabons Lane ZS provided additional support to programs targeted at commercial customers as most opportunities for these customers had been exhausted.</p>
Blacktown North/ Marayong (BSC Non-tariff Residential)	<p>The BSC project reductions at the Marayong ZS supply area were to provide additional support to a soon-to-launch program targeting the Blacktown industrial area. Approximately 0.6MVA of load reduction was achieved. During FY2008/09 Integral decided not to proceed with the Blacktown program as load in the supply area had failed to grow as expected. This may have been in part due to BSC measures.</p>
<p><i>Table 2.1 – Descriptions of Integral's 2009/10 demand management measures.</i></p>	

### 2.3 Structure of submission

The submission covers 16 Non-Tariff Demand Management programs, of which eight are active, undertaken by Integral Energy in 2009/10 and one Tariff Demand Management program. Detailed information on two new DM programs implemented in 2009/10, Rooty Hill and Granville, is provided in Section 5.

A summary of the total demand management costs, foregone revenue, and adjustment required to reflect the time value of money is provided in Section 4.

As required by the AER, Integral Energy engaged an auditor, Futura Consulting, to carry out an independent review of the avoided distributions costs, foregone revenue and other parameters relevant to the D-factor calculation. Futura Consulting's report is provided in a separate (Confidential) attachment to this submission.

Futura Consulting concluded that the information provided on the DM programs selected by Integral Energy for inclusion in its 2009/10 D-factor submission to the AER is correct and reasonable.

#### **2.4 Additional information**

Integral Energy has compiled this DM Information consistent with the 2009 Determination. It believes that the material included in the submission, and the attachments, is sufficiently detailed. However, Integral Energy is happy to provide further information if requested.



### 3 Assumptions and methodologies

#### 3.1 Assumptions used in avoided distribution cap calculations

The methodology for calculating avoided distribution costs is according to the AER guidelines and represents the expected change in the present value, in 2009/10 dollars, of future capital and operating costs affected by the non-tariff demand management measures. Unless otherwise stated the following assumptions are made when identifying possible programs and calculating the Avoided Distribution Cost (ADC):

- Load forecasts are based on Integral Energy's Forecasting Methodology as outlined in the Integral Energy Branch Procedure Document Number NFB 0010 (Renewal Date 18/6/12) - Integral Energy's load forecasts are based on extrapolation of historical growth rates, combined with known future spot loads and new residential releases.
- Supply side capital costs quoted are as per the Integral Energy's Strategic Asset Management Plan (SAMP). The SAMP details forecasts capital expenditure over a rolling 10 year period.
- Time period used for ADC calculations is 15 years.
- Discount rate used for ADC calculations is 7%.
- Nominal Rate of Return used in time value of money calculations for 2011/12 is 10.02%.
- Operating costs comprise maintenance costs only, which are budgeted at 2% of the depreciated capital cost of the asset.

#### 3.2 Methodologies underpinning foregone revenue calculations

There are two commonly deployed methodologies used to calculate energy and demand foregone. Both of these methodologies are described below.

Once energy and demand foregone estimates are calculated each customer's network pricing is applied to these values and a value for revenue foregone calculated.

***Metering Data Verification Methodology:*** This methodology involves using historical customer meter data and comparing it to meter data post implementation of approved DM initiatives. This methodology is typically used for:

- Power factor correction (PFC) equipment installations.
- Large peak reduction reducing load shedding initiatives.
- Deploying of back up generators.
- Initiatives for which peak load reductions comprise a significant proportion of overall site load such as in the case of Demand Side Response (on call load curtailment) initiatives.

***Engineering Calculation Methodology:*** This methodology involves estimating load reductions by subtracting calculated energy and demand after implementation of initiatives from calculations of energy and demand prior to the implementation of initiatives. This methodology is typically used for:

- Replacement or conversion of equipment such as hot water systems, chillers, computer monitors and light fittings (lamps and ballasts) from less efficient to more efficient.
- Installation of equipment such as skylights, lighting control equipment or variable speed drives.
- Upgrading of equipment such as lighting control equipment and chillers.

When using the engineering calculation methodology the following items are considered:

- Equipment ratings.
- Equipment quantities.
- Hours of operation of equipment.
- Changes in diversity of usage patterns.

### **3.3 Costs incurred**

Actual demand management costs incurred are recorded in Integral Energy's financial systems and include:

- Payments to customers or DM service providers
- Legal costs
- Marketing costs
- Project management and administration costs.

#### 4 Total DM cost pass through amounts

Table 4.1, shows the breakdown of the total amount for the DM Cost Pass Through Amount for year 2011/12 according to the relevant AER categories, being Non-Tariff Demand Management Costs, Tariff Demand Management Costs, Foregone Revenue, and an amount to reflect the time value of money.

Component	AER ref	Details
Non-Tariff Demand Management Costs for 2009/10 (\$2009/10)	11.1 (b)	\$935,058
Tariff Demand Management Costs for 2009/10 (\$2009/10)	11.1 (d)	\$4,930
Reasonable estimate of Foregone Revenue for 2009/10 (\$2009/10)	11.1 (e) (1)	\$2,888,702
Amount to reflect the time value of money (\$2011/12)	11.1 (g)	\$805,710
<b>Total</b>		<b>\$4,634,400</b>
<i>Table 4.1 – Breakdown of DM Cost Pass through Amount (2011/12) by AER category.</i>		

## 5 Measures commenced during FY2009/10

<b>Detail</b>	<b>Rooty Hill</b>
Description of the Network Element and Constraint.	The Rooty Hill Industrial and surrounding area has been experiencing natural load growth in demand predominantly from the industrial area and air conditioning in the residential area. This is resulting in current capacity on the Rooty Hill ZS limits being reached and the need for network augmentation.
Description of the Preferred Supply Side Option.	The supply side project to be deferred is the construction of a new zone substation at North Glendenning at a cost of \$23 million. This project will be deferred by two years.
Description of DM Measures.	The measures implemented under the Rooty Hill DM program in FY2009/10 were power factor correction and load curtailment. A number of energy audits have been conducted and opportunities identified.  An air-conditioner cycling tariff program, and a peak time rebate (PTR) tariff program were also implemented in the residential sector in FY09/10 to address the constraint on the Rooty Hill ZS.
Avoided Distribution Cost (ADC)	The ADC for the deferral of the supply-side augmentation is \$1,100 (\$kFY09/10)

<b>Detail</b>	<b>Granville</b>
Description of the Network Element and Constraint.	The Granville commercial, industrial and surrounding area has been experiencing natural load growth in demand from all sectors. This is resulting in current capacity on the Granville ZS limits being reached and the need for network augmentation.
Description of the Preferred Supply Side Option.	The supply side project to be deferred is the augmentation of the Granville ZS at a cost of \$32.06 million. This project will be deferred by one year.
Description of DM Measures.	No measures were implemented under the Granville DM program in FY2009/10 as the program commenced in late April 2010. A number of energy audits have been conducted and opportunities identified.
Avoided Distribution Cost (ADC)	The ADC for the deferral of the supply-side augmentation is \$885 (\$kFY09/10).

**6 Attachment – auditor’s report**

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