Hypothetical EnergyAustralia D-factor Submission post 2009

Introduction

This submission has been prepared under the incentive provisions for demand management in the 2009/2014 Determination. It relates to demand management measures undertaken in the 2009/10 financial year for inclusion in the weighted average price control formula for 2011/12.

There were three demand management projects for which we incurred costs or revenue foregone in 2009/10. In summary, EnergyAustralia's submission identifies the following amounts:

Project	Costs 2009/10	Foregone Revenue 2009/10
1. Traditional D-Factor project	$70,000	$0
2. Broad based Project– commercial lighting conversion	$250,000	$100,000
3. Development & Innovation Project – residential hot water controls	$300,000	$0
2008/09 Independent Expert's Review	$15,000	

This submission is arranged by project. For each project, the following information is included:

- A description of the DM project undertaken, including the target capital and operating costs to be deferred and the decision making process followed.
- Details of the costs incurred in 2009/10.
- Calculation of avoided network cost cap applicable to the 2009/10 claim, based on the avoided network costs anticipated at the time of the decision to undertake the DM project, or other method as applicable.
- Estimate of revenue foregone in 2009/10 due to the DM project.
- Details of relevant assumptions and methodologies underlying these estimates.

Methodologies and Assumptions

The following methodologies and assumptions for calculation of avoided costs and foregone revenue are used for all projects unless specifically noted otherwise.

Actual costs incurred are collected by project in the EnergyAustralia financial system. The amounts claimed are those actually booked to each project in the applicable year. Costs include development and implementation costs, project management and other directly related costs, but exclude costs related to DM investigations.

The methodology for estimating avoided costs is according to the IPART guidelines, based on the expected costs of network projects at the time of deciding to implement the DM alternative, as documented in the relevant planning documents of the time. The value is expressed as a present value in 2009/10 dollars based on anticipated real cashflows and a real discount rate of 7%.

1. Traditional D-Factor project – Zone X DM program

This program was a combination of two DM measures, targeting a reduction in demand in Zone X.

In October 2007, we identified that load at Zone X would reach the level where additional capacity would be needed by summer 2010/11. The default network supply option was to install an additional transformer at the zone substation which, with associated works would cost an estimated $10m. Our analysis showed that a reduction in peak demand of 1 MVA would enable us to defer this investment by one year.

A DM investigation carried out during 2008 found that the combination of a customer PFC (power factor correction) program and an interruptibility arrangement would provide an effective reduction of up to 1.2MVA. These projects are described individually below.

The combined cost to EnergyAustralia was estimated at $150,000.

The PFC program targeted customers in the areas fed by the Zone X zone substation in order to reduce demand at the substation. The interruptibility arrangement enabled EnergyAustralia's network control room to initiate removal of a customer's load from the network by transferring it to their standby generator to relieve load on the zone substation whenever required.

a) Power Factor Correction

This project targeted the installation of power factor correction (PFC) units on 10 customers' supplies in the areas fed by the Zone X zone substation in order to achieve 0.5MVA of demand reduction. Target customers were identified on the basis of their average power factor being below 0.9, the level required under NSW Service and Installation Rules. The customer approach and implementation model was identical to our previous customer power factor projects. The estimated cost for this project was $50,000.

b) Load Curtailment Agreement

Our investigation identified that the Company X had the capability of removing their load from the network in a controlled fashion and with no impact on the company's operations. The peak load curtailment potential was estimated at 0.7MVA.

The project involved establishing a Load Curtailment Agreement with the Company for 12 months. Under this agreement, EnergyAustralia would install communications equipment to enable the EA control room to remotely initiate a reduction of the company's load. In return, the Company would receive payments based on the availability of the facility and dispatch payments whenever the facility was operated.

The total estimated cost of to establish and operate this project for one year was $100,000.

2009/10 Costs

Implementation began in March 2009. In FY 2009/10 the costs for the project were $70,000.

Anticipated Avoided Network Costs

The anticipated avoided network costs have been calculated on the basis of an expenditure of $10m in 2009/10 and the associated ongoing operating and maintenance charges being deferred by one year as

a result of this project. The calculation has been carried out over 15 years according to the IPART methodology. The present value of avoided network costs in 2009/10 is calculated as $600,000.

Foregone Revenue

Neither the curtailment agreement nor any of the PFC units were operational in the 2009/10 reporting year and no foregone revenue is claimed.

2. Broad based DM Program – commercial lighting conversion

This program targeted the installation of more efficient lighting options to replace 50W halogen downlights commonly used in commercial premises such as retail, office foyers and entertainment areas. The program was offered to all commercial customers in the EnergyAustralia area.

50W halogen lamps are in widespread use in commercial buildings. Effective replacements are available, including lower wattage high efficiency lamps, compact fluorescent replacements and LED lamps, depending on the circumstances of use. The commercial lighting peak is coincident with the summer afternoon peak that is prevalent across EnergyAustralia's area in locations dominated by commercial loads.

Reductions in demand from these installations are predictable and effective, but not necessarily attributable to individual capital investments. Broad based implementation of this measure is more efficient than individual smaller projects because the program costs can be spread over a larger number of installations and the implementation model of engagement through suppliers and designers is more effective if it can be offered generally.

Our estimates of technical and market potential indicate that this project is likely to achieve a reduction in summer peak demand totalling 15MVA across the EnergyAustralia territory.

The program design consists of the development of educational marketing materials suitable for the sector explaining the options and enabling customers to easily make choices between options. In addition there is an engagement component with market intermediaries that provides a reward to companies that successfully undertake projects within the program scope related to the calculated kVA reduction achieved by the project. The reward is designed to be sufficient to cover the costs of providing free design and quote services to customers. In addition there is a program facilitation component that links registered service providers with prospective customers and provides some data management and quality assurance.

The total cost of the project is estimated at $900,000. Approximately $150,000 is expected to be generated from the sale of NGACs created from the projects, leaving a network component of $750,000, which is below the deemed broad based project efficiency level of $53/kVA (based on the expected reduction of 15MVA).

2009/10 Costs

Implementation began in July 2009. In FY 2009/10 the costs for the project were $250,000.

Avoided Distribution Cost Cap

The avoided distribution cost cap for this program has been calculated on the basis of an expected reduction of 15MVA and the deemed efficient broad based avoided distribution cost factor of $53/kVA. The present value of avoided network costs in 2009/10 is calculated as $795,000.

Foregone Revenue

Foregone revenue is calculated based on actual 2009/10 billing data and beginning from the date of installation of each project. The calculated revenue foregone in 2009/10 for this project is $100,000.

3. Development & Innovation Project – residential hot water controls

This project has been developed to test the hypothesis that application of a range of control approaches to continuously supplied electric hot water systems could provide a useful reduction in localised peak demands.

Approximately 250,000 residential customers in EnergyAustralia's territory still use electricity supplied on 24 hour availability tariffs for water heating in conventional electric cylinders (mainly in apartments). In addition, many customers who have installed solar or heat pump based water heaters have booster elements connected to uncontrolled electricity supplies. Winter evening peaks still represent a significant driver of capital expenditure in residential dominated areas of EnergyAustralia's network, and hot water heating is a major contributor.

Applying controls to the availability of electricity to these hot water systems may provide an effective means to reduce their contribution to peak demands, and provide an option for reducing costs to these customers. Existing off peak tariffs are not effective because the storage volumes and usage profiles of these systems do not permit the length of interruption possible with large electrically heated water tanks.

The project aims to test the efficacy of various control scenarios at achieving diversified peak demand reductions in specified areas and their effect on service provision and acceptability to customers.

If this type of approach can be shown to be effective, it may be a cost effective means to achieve demand reductions in constrained areas where capital expenditure deferrals could be achieved.

The program will target 400 residential hot water customers in the xyz area who have continuously supplied water heating, plus 250 customers with solar or heat pump water heaters. Load profiles will be monitored before the controls are applied and after to determine the net impact of each control approach. Surveys of customer satisfaction will determine acceptability of performance and likelihood of takeup of various offers to participate. This will enable likely conversion rates to be estimated.

Costs include the development and management of the project, establishment of the control system and necessary switching devices, enrolment and rewarding of customers for participation, installation and reading of monitoring equipment, market research and survey costs, analysis of results and reporting.

2009/10 Costs

Implementation began in October 2009. In FY 2009/10 the costs for the project were $300,000.

Avoided Distribution Cost Cap

This program is submitted as an Innovation and Development project under the overall deemed ADC cap provided for this project category in the Determination.

Foregone Revenue

No net change in consumption has been recorded for participating customers, as this is primarily a load shifting project. Customers participating to date are supplied on flat tariffs and reward structures are outside the billing process. No foregone revenue is claimed for 2009/10.

4. Summary of Claim and Calculation of D-factor

Project	Avoided Cost Cap (09/10)	Costs 2009/10	Claim	Foregone Revenue 2009/10
1. Traditional D-Factor project	$ 600,000	$ 70,000	$ 70,000	$ -
Subtotal – Direct ADC	**$600,000**	**$ 70,000**	**$ 70,000**	
2. Broad based Project– commercial lighting conversion	$795,000	$ 250,000	$ 250,000	$ 100,000
3. Development & Innovation Project – residential hot water controls	N/A	$ 300,000	$ 300,000	$ -
Subtotal – Deemed ADC	**$2,000,000**	$550,000	$550,000	
Total	**$ 2,600,000**	**$620,000**	**$ 620,000**	**$ 100,000**

Plus 2008/09 Independent review		**$ 15,000**
Plus Foregone Revenue		**$ 100,000**
Total D-factor Claim amount	$2009/10	**$ 735,000**
nominal rate of return	9.70%	
Time Value of money	to year t+1 (2011/12)	$ 149,505
Total Claimed	$2011/12	**$ 884,505**