

Demand Management Options for Balgowlah Area

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Responses requested by 31 August 2006

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1 Introduction

EnergyAustralia invites submissions from interested companies, organisations and individuals regarding opportunities and ideas to reduce the peak electrical demand in the Balgowlah area.

Growth in electricity demand in this area means that peak demands are forecast to approach the capacity of the local electricity supply network. EnergyAustralia is investigating initiatives to reduce this demand ("demand management" or DM) as part of a solution that will maintain reliability and levels of service more cost effectively than installing additional network infrastructure alone.

EnergyAustralia has completed a DM Screening Test and is of the opinion that cost effective DM options might be found, if explored further. On this basis it is conducting an investigation to scope the available options.

In the context of this investigation, "Demand Management" includes measures to alter the magnitude or timing of customers' peak demand such as:

- Installation of energy efficient equipment in energy users' premises that permanently reduces peak demand including power factor correction equipment
- "Fuel switching" from electricity to another fuel, such as gas
- Installation of equipment such as energy and thermal storage
- Agreements with energy users to interrupt or reduce certain loads when called upon to do so
- Agreements with energy users to run standby generators when called upon to do so
- Installation of generation or cogeneration equipment

EnergyAustralia will assess options identified through this process and then consider them alongside traditional network supply expansion options to determine the most cost effective combined strategy for implementation.

This document provides information about the nature of the demand profile in the area and the reasons we are seeking solutions.

2 Current Supply Arrangements

Balgowlah zone substation consists of two 33/11kV transformers. It is currently supplied via a 33kV feeder S01, with backup supply from feeder S10, both from Warringah Sub Transmission Station. While it can supply up to 40.6MVA, the maximum recommended load on Balgowlah substation is limited by the transformer ratings to 30.8MVA in summer and 32.1MVA in winter.

The Balgowlah zone substation supplies Balgowlah, North Balgowlah, Seaforth, Clontarf, Balgowlah Heights, Fairlight and Manly Vale. The area is shown in Map 1

MAP 1: Balgowlah supply area



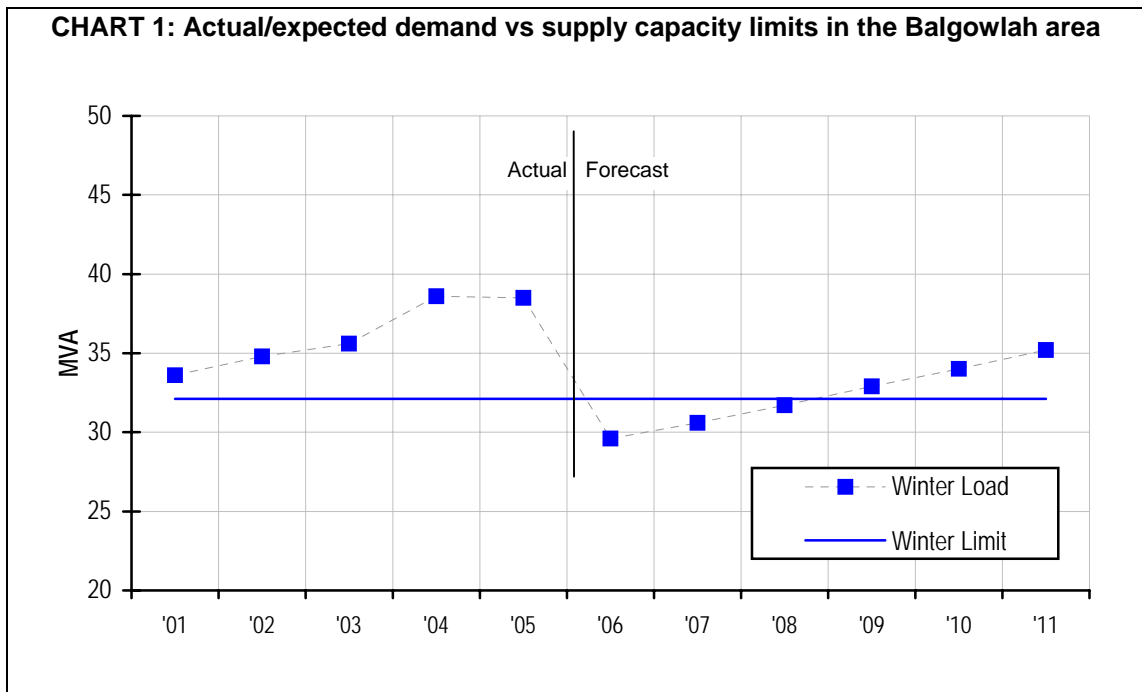
Map reproduced with permission of UBD. Copyright Universal Press Pty Ltd CS

3 Supply Capacity and Demand Forecast

Peak demand has grown steadily in the past and is forecast to increase at about 1.1MVA per year in the near future. As peak demand grows beyond a certain level (the “secure capacity”) the possibility of a negative impact on reliability increases. When demand reaches a predetermined level, this possibility becomes sufficiently likely that action is required to either expand the network capacity or reduce peak demand.

The Balgowlah zone is primarily residential and the peak load is during winter from 6pm to 9pm. The winter peak was over the tolerable level in the last five years. The Balgowlah winter peak at zone substation is the only season to be of concern. The summer peak is not forecast to reach this level in the foreseeable future.

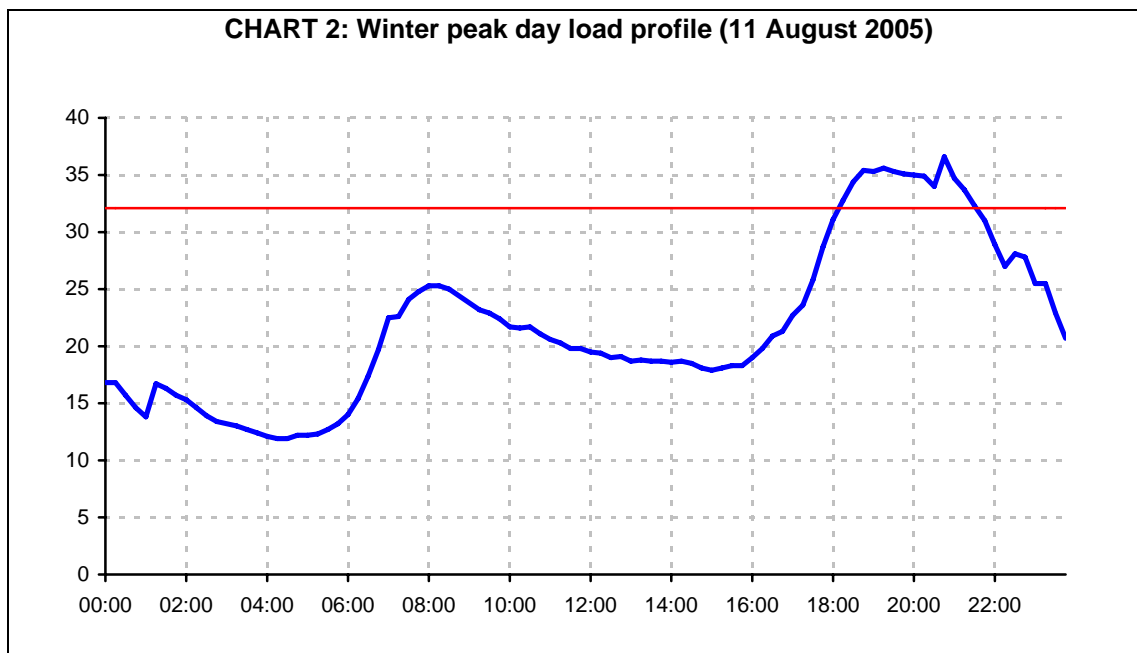
The forecast peak demand for the Balgowlah zone in winter 2006 is 38.8MVA. However, the 10MVA load will be transferred from Balgowlah to the Harbord zone substation before winter 2006. Therefore, the winter peak load in Balgowlah zone substation will be under the tolerable level till winter 2009. Chart 1 shows actual and forecast winter peak loads and maximum acceptable loading level at Balgowlah zone substation.



Balgowlah zone substation has major equipment which is approaching the end of its useful life. All major equipment at the substation is recommended for replacement within the next ten years, and all switch gear within 5 years.

Chart 2 shows the electrical load profile on a typical winter peak day – 11 August 2005. The winter peak demand typically occurs on weekday evening between 6:00pm and 9:00pm. The peak demand was 36.6MVA. The red line represents the acceptable loading limit.

CHART 2: Winter peak day load profile (11 August 2005)



4 Network Infrastructure Solution

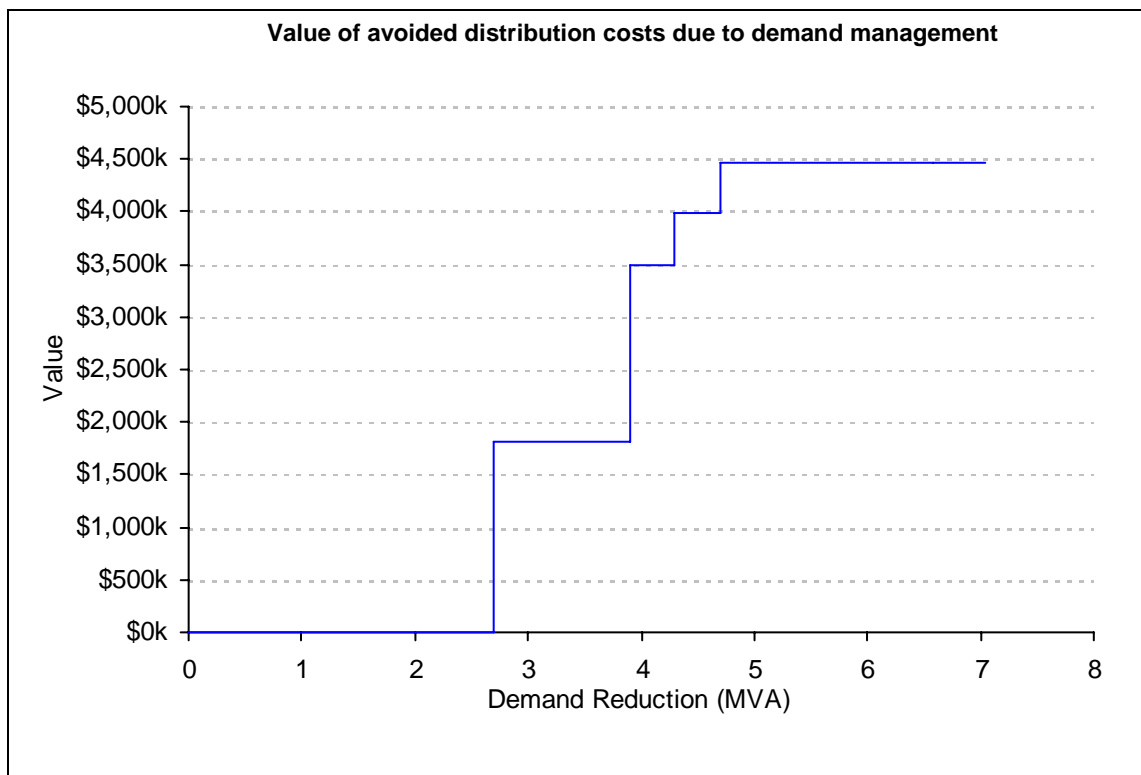
The preferred supply system solution is to construct a new 132/11kV zone substation to replace the existing Balgowlah zone substation at a cost of approximately \$25million. A final decision to proceed would need to be made before mid 2007 to enable the construction to be completed by the end of 2009.

5 Required Demand Management Characteristics

In order to defer this investment by one year (that is until 2010), we would need to implement demand reductions totalling 2.7MVA in Balgowlah before winter 2009. The demand reduction would need to be effective during winter evening between about 6:00pm and 9:00pm. Because a decision needs to be made by July 2007, we would also need to be confident before then that the demand reductions could be delivered before winter 2009.

In assessing the cost effectiveness of options, the cost to EnergyAustralia of the DM options will be compared to the value created by deferring the capital expenditure. This provides a broad indication of the level of funding that may be available for a portfolio of DM projects. However, it should be noted that the determination of cost effectiveness is complex and the value attributed to individual elements may be higher or lower than this figure.

The value of demand reductions in Balgowlah is shown graphically below. It indicates that a 2.7MVA demand reduction would enable a one-year deferral and would have a value of up to \$1.8million or \$660/kVA. For a two year deferral, 3.9MVA would be needed and the relative value would increase to about \$3.5million or \$890/kVA. In order to be considered cost effective, the overall cost to EnergyAustralia of the required portfolio of demand management options would need to be below these amounts.



6 Public Consultation and Submissions

6.1 Consultation

The intended timetable for this public consultation and investigation is:

Options Paper published:	1 June 2006
Closing date for submissions:	31 August 2006
Completion of Investigation Report:	30 November 2006
System support decision deadline:	31 July 2007

EnergyAustralia will examine a range of options including those identified in submissions and those resulting from its own research and investigations. Each identified option will be evaluated in terms of the amount of demand reduction it could deliver and the net cost to EnergyAustralia, and ranked by cost-effectiveness. EnergyAustralia will compare this list to the economic value of deferring the most favourable supply expansion option and determine whether enough cost effective options exist to make DM a feasible option. The results of this analysis will be published in the Investigation Report.

If DM is determined to be feasible, EnergyAustralia will proceed to develop the most favourable options, in company with the relevant proponents or customers where applicable, so that a final decision to proceed can be made.

Respondents to this consultation paper will be kept informed about the progress of the project at key stages and may be contacted for further information if their ideas/suggestions are going to be taken to the next step of project development.

6.2 Form of Submissions

EnergyAustralia is seeking written submissions in order to identify the broadest possible range of "demand management" opportunities to reduce peak electrical loads or increase supply from alternative sources. It will investigate whether proposed demand management options are practical, deliverable and cost effective.

Submissions should be in writing, and fall into one of the following broad categories:

- Details of specific demand management opportunities that EnergyAustralia can investigate (for example, a customer may have a large electrical load that could be interrupted or that could be reduced through energy efficiency or fuel substitution).
- Proposals for demand management from parties able to implement demand reduction measures themselves. The proposal should include details of the magnitude of the demand reduction that can be achieved, how these demand reductions will be achieved, and the estimated cost to EnergyAustralia. These proposals are non-binding and will be considered along with demand management opportunities identified and investigated by EnergyAustralia.
- General views and opinions, including probable costs, as to what are the best options for EnergyAustralia to cost effectively meet the future electricity requirements of the area.

Submissions should include as much of the following information as is available:

- The name, address and contact details of the company or person making the submission.
- The name, address and contact details of the company or person responsible for the load or alternate supply (if different to above).
- The size, type and location of load(s) that can be reduced, shifted, substituted or interrupted.
- The size, type and location of generators that can be utilised if required.
- The type of action or technology proposed to reduce peak demand / provide alternate supplies.

- The time required to implement these measures and any period of notice required before loads can be interrupted or generators started.
- The approximate total cost to implement these measures and any cost savings that would accrue to the owners / operators of the equipment.
- The approximate cost of any contribution / assistance that EnergyAustralia may be required to make in order to make use of this measure for demand management.
- Other additional information to assist EnergyAustralia in investigating and evaluating demand management options.

As EnergyAustralia may be required to publish information about submissions, any commercially sensitive material and other material that the respondent making the submission does not want to be made public should be clearly identified.