

**Demand Management  
Options for Willoughby  
STS Supply Area**

**October 2007**

**Responses request by 18 January 2008**

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# 1 Introduction

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EnergyAustralia invites submissions from interested companies, organisations and individuals regarding opportunities and ideas to reduce the peak electrical demand in Willoughby STS supply 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 identify and evaluate 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
- "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.

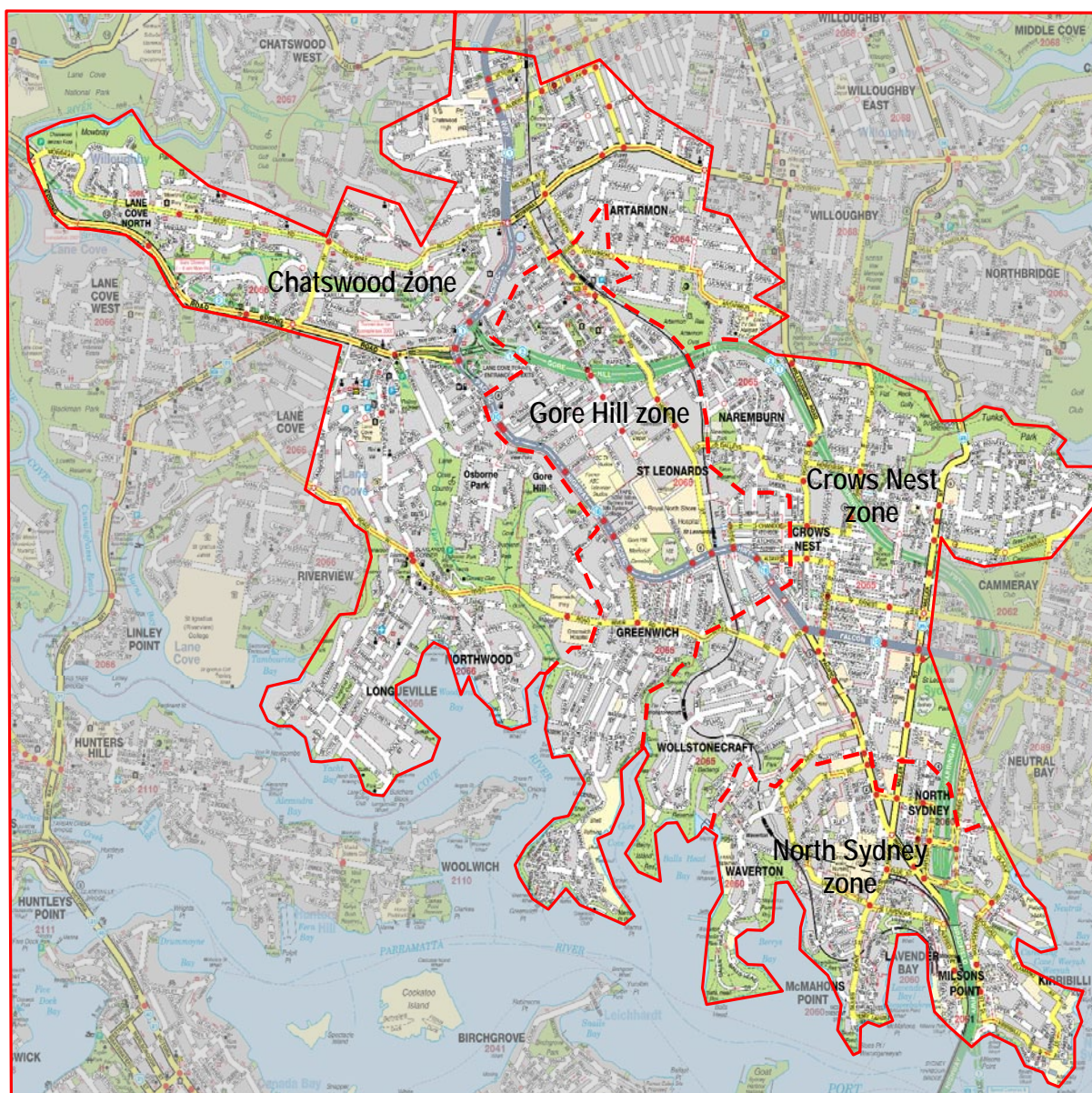
This document provides information about the nature of the demand profile in the area and the reasons we are seeking solutions.

## 2 Current Supply Arrangements

Willoughby STS is a 132/33kV subtransmission substation equipped with four 120MVA, 132/33kV transformers. It supplies four zone substations: North Sydney, Crows Nest, Gore Hill and Chatswood.

Willoughby STS supplies a large part of the lower North Shore areas including Milsons Point, Lavender Bay, North Sydney, Waverton, Wollstonecraft, Crows Nest, Greenwich, Northwood, Longueville, Gore Hill, Artarmon, St Leonards, Naremburn, Chatswood West, Lane Cove North. The Willoughby STS supply area is shown in Map 1.

**Map 1: Willoughby STS supply area**



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### 3 Supply Capacity and Demand Forecast

The area supplied by Willoughby STS consists of major commercial customers. Summer is the most critical season. The Willoughby STS has a firm rating of 304MVA both in summer and winter limited by transformer capacity. The peak demand was 279.3MVA in summer 2005/06, and 260.8MVA in winter 2005. Including new load from the development at Royal North Shore Hospital, we forecast that demand would exceed capacity by 4.5MVA in summer 2009/10, rising to 13.6 above capacity in summer 2010/11.

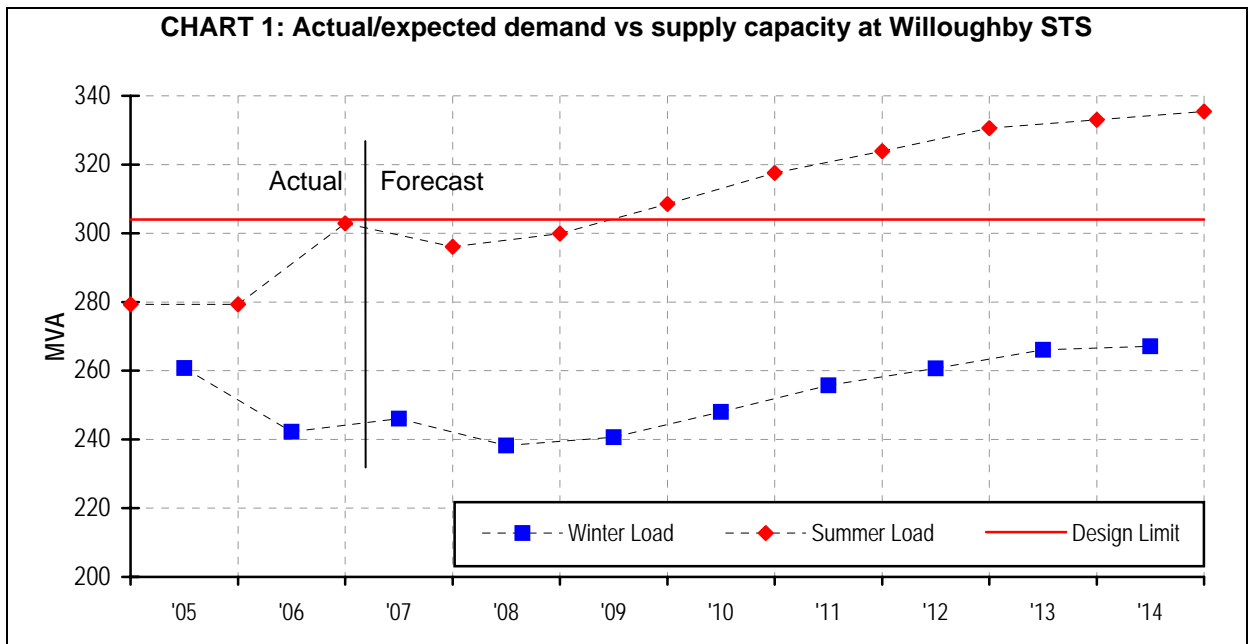
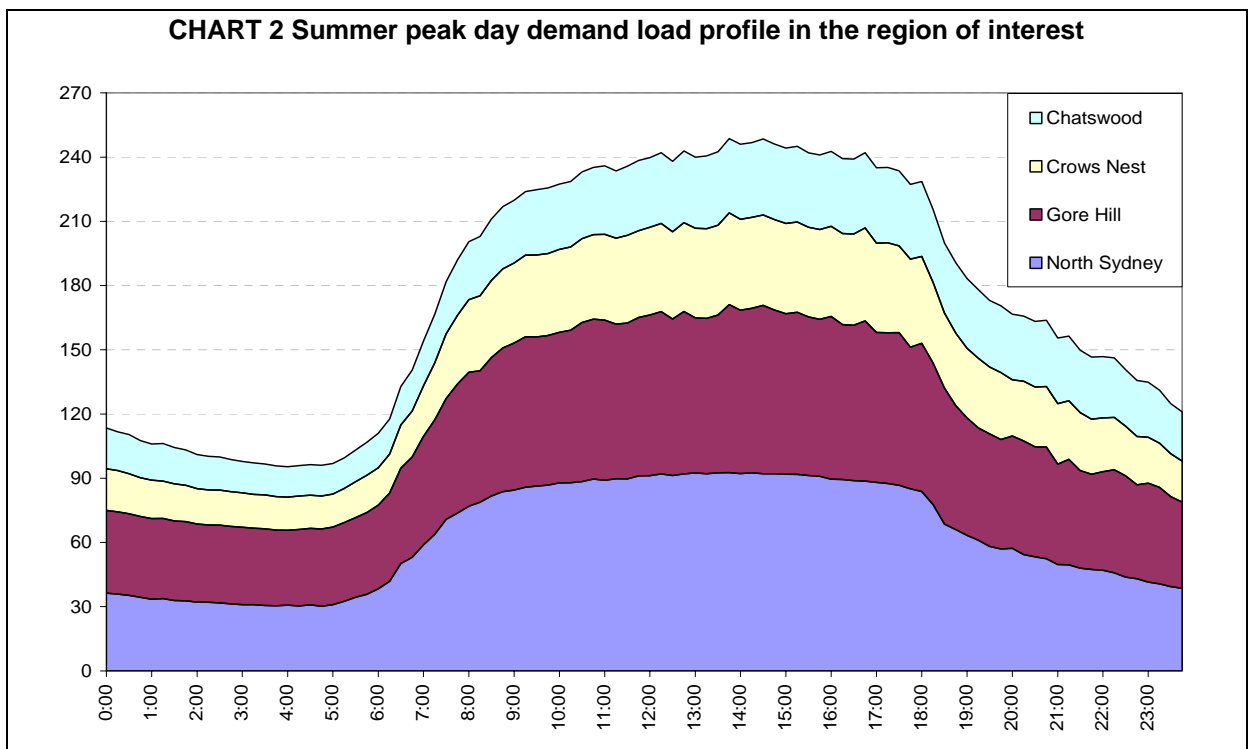


Chart 2 shows the electrical load profile on a typical summer peak day in summer 2006/07. The summer peak demand typically occurs on weekday between 1:00pm and 5:00pm.



## 4 Network Infrastructure Solution

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The preferred supply side solution is to develop a new 132/11kV zone substation in the St Leonards area at an estimated cost of \$30m. Commissioning is proposed before summer 2009/10, with an investment decision to be made by March 2008.

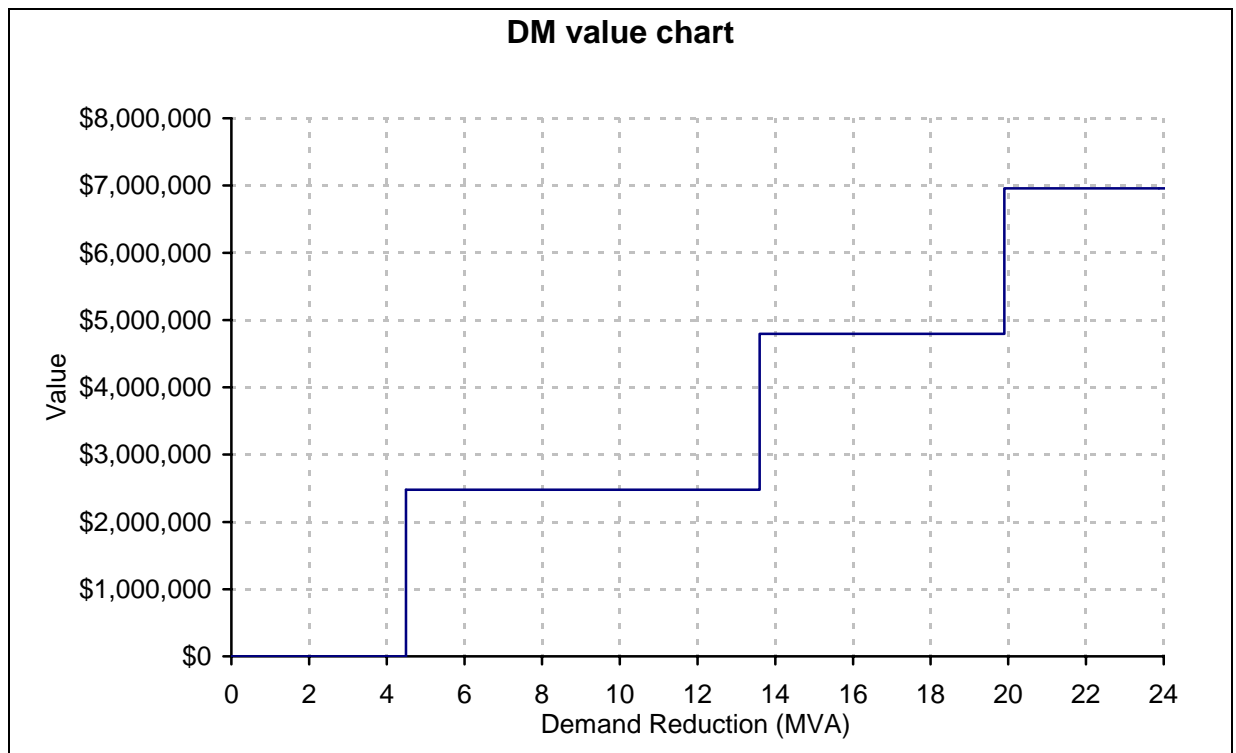
## 5 Required Demand Management

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If 4.5MVA of demand reduction could be identified and implemented across Willoughby STS supply area before summer 2009/10, then the proposed investment could be deferred by one year. This represents 1.5% of the demand on this substation. The demand reduction would need to target the commercial or residential sectors in the summer afternoon. The cost saving due to this deferral would be \$2,480,000, or \$550/kVA.

If 13.6MVA of demand management could be identified and implemented in Willoughby STS supply area before summer 2010/11, then the supply side investment could be deferred for two years. The value of this deferral is \$4,800,000, or \$350/kVA.

Further demand reductions in the area would enable further deferrals, however the cost savings (in terms of \$/kVA of reduction) decline.



## 6 Public Consultation and Submissions

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### 6.1 CONSULTATION

The intended timetable for this public consultation and investigation is:

Options Paper published:	23 October 2007
Closing date for submissions:	18 January 2008
Completion of Investigation Report:	March 2008
System support decision deadline:	March 2008

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.

Submissions should be addressed to:

Bing Liu – Demand Management Unit  
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GPO Box 4009  
Sydney 2001

Or email to [demandmanagement@energy.com.au](mailto:demandmanagement@energy.com.au)