

DEMAND MANAGEMENT SCREENING TEST

Thornton Zone Substation

Current Supply Arrangements

Thornton zone substation was commissioned in 2005 to allow load to be transferred from East Maitland and Tarro zone substations. Thornton zone substation has two 33MVA transformers and is supplied from two 33kV feeders from Beresfield Sub-transmission substation.

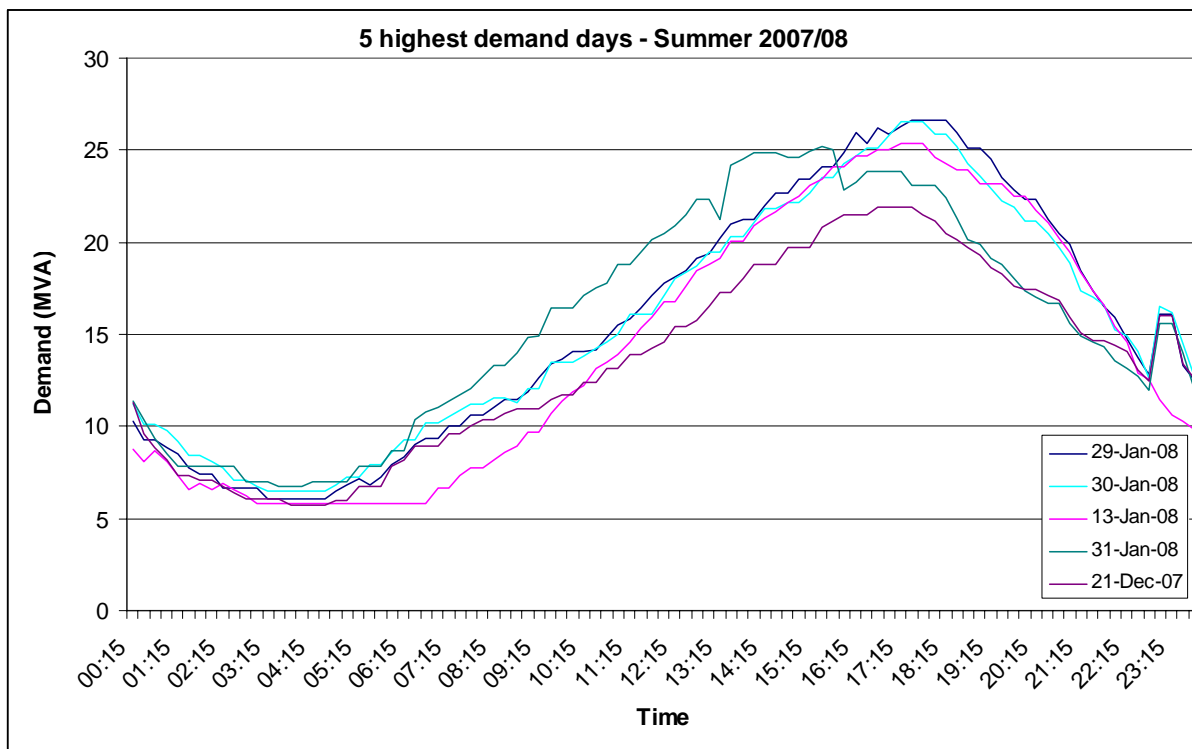
The load area driving this investment is the contiguous areas of Thornton, East Maitland and Tarro zones, and they should be considered in aggregate. Summer is the key season and both Tarro and East Maitland are also approaching their licence capacity.

The summer load design limit for Thornton zone substation is 45.6MVA. For East Maitland it is 32.9MVA, and for Tarro, 27.5MVA – a total of 106MVA.

Thornton zone supplies the Thornton, Wallalong, Hinton, Morpeth and Metford areas.

Supply Capacity and Demand Forecast

Thornton zone supplies a predominately residential load. Summer peaks are higher than winter peaks, and the summer peak occurs between 4pm and 6:30pm.

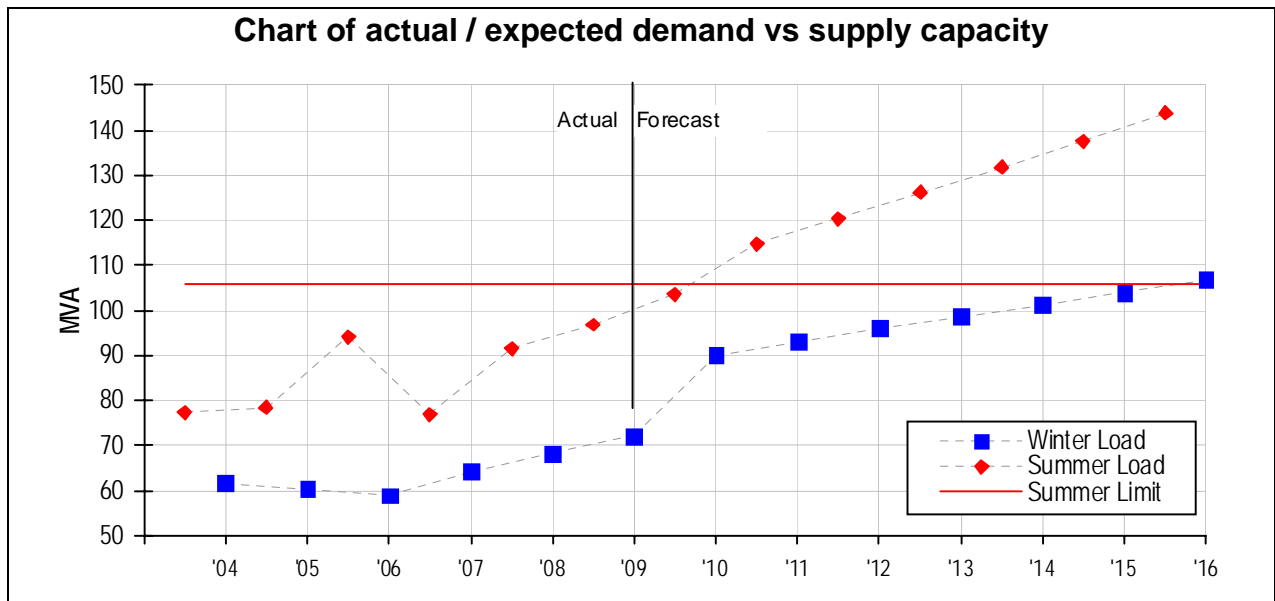


There is a 5MVA load transfer from Tarro zone substation to Thornton zone substation which is planned for 2008.

There are significant new loads expected at Thornton zone substation in the near future, including a 3MVA residential development, and a 1.8MVA load increase at a Sydney water site.

There are also significant new loads expected at East Maitland zone substation in the near future, including a 6 MVA increase in load at a shopping centre.

The following chart shows the resulting forecast demand verses capacity at the combined Thornton, Tarro and East Maitland Zones.



Supply Strategy Option

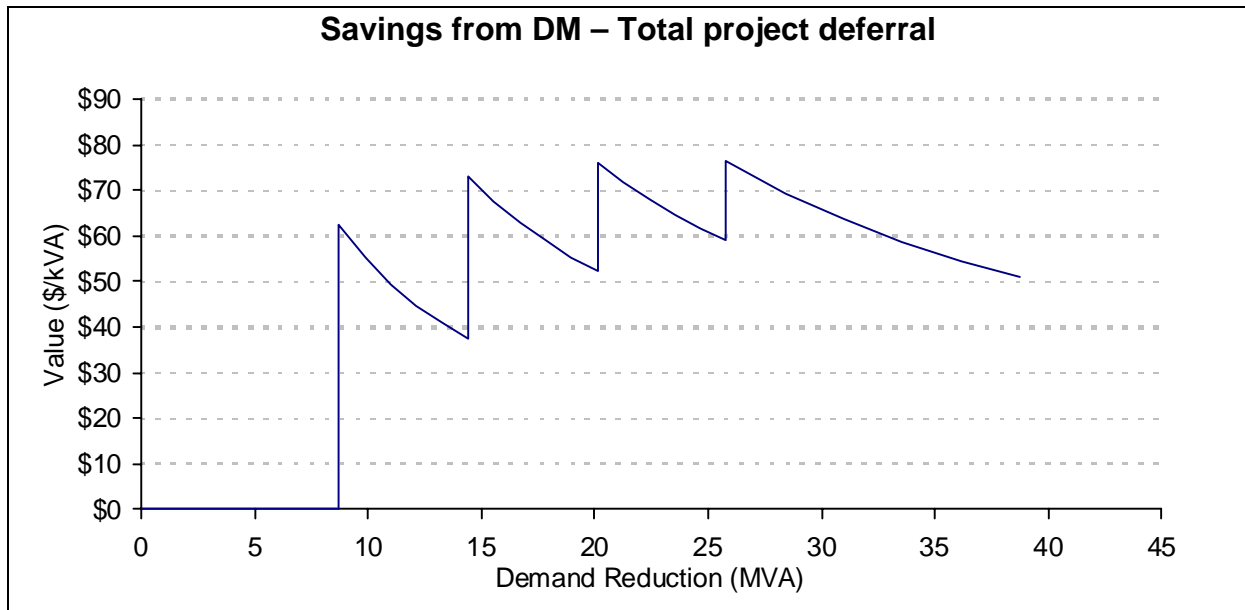
The preferred supply side option is to install an additional transformer, capacitors and associated 11kV works. The cost of this project is estimated at \$7.4 million.

To meet the required completion date of September 2010 a decision on this investment would need to be made by September 2009.

Required Demand Management Characteristics

To achieve a one year deferral of the proposed investment, we would need to identify and implement 8.7MVA of demand management by summer 2010/2011. This represents 7.6% of the total demand on the Thornton, Tarro and East Maitland zone substations, which is moderate. The savings from a one year deferral would be \$540,000 or \$62/kVA, which is low.

To achieve a two year deferral of the proposed investment, we would need to identify and implement 14.4MVA of demand reduction by summer 2011/12. The savings from a two year deferral would be \$1.05m, or \$73/kVA.

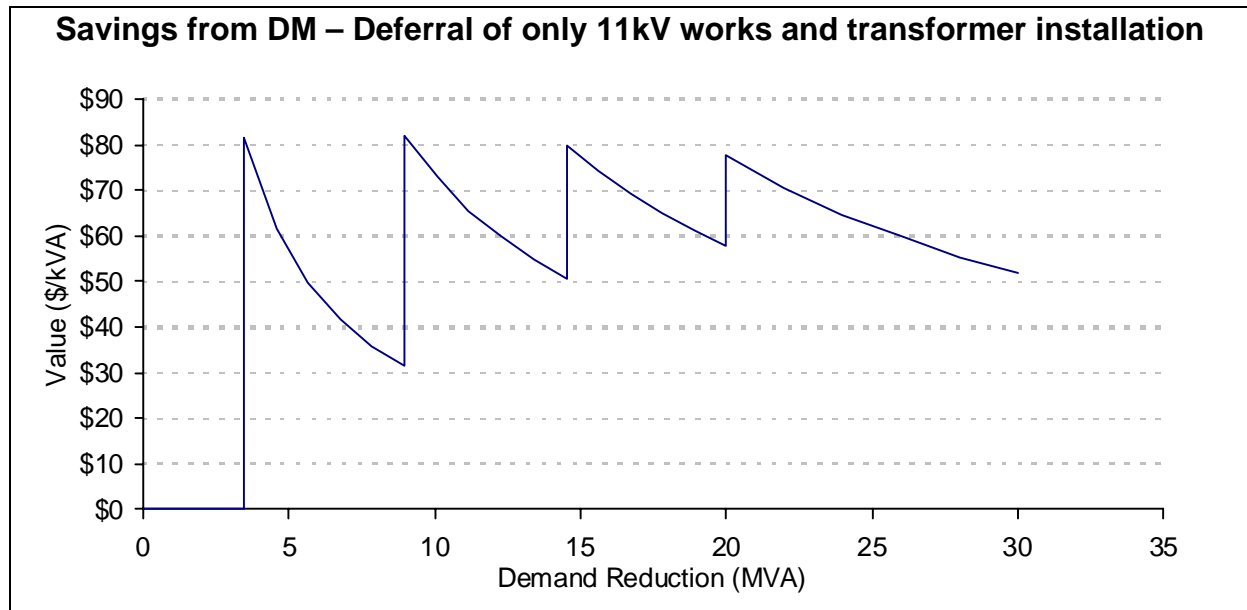


There is an option to split the project and defer only part of the investment. The estimated cost of the capacitor installation is \$1m. Separating the supply side work projects, and installing the capacitors a year earlier will increase the transformer installation and associated 11kV work by \$200,000 to \$6.4m.

The installation of capacitors will reduce the load at Thornton Zone by approximately 5.2MVA in summer 2010/11.

To achieve a one year deferral of only the 11kV works and the transformer installation, we would need to identify and implement 3.5MVA of demand management by summer 2010/2011. This represents 3.15% of the total demand on the Thornton, Tarro and East Maitland zone substations, which is low. The savings from a one year deferral would be \$280,000 or \$81/kVA, which is moderate.

To achieve a two year deferral of the 11kV works and the transformer installation, we would need to identify and implement 9MVA of demand reduction by summer 2011/12. The savings from a two year deferral would be \$730,000 or \$82/kVA.



The demand requirement for deferral of the entire supply side solution is large in absolute terms, particularly for a predominately residential area, and the savings are low, both in absolute terms and in \$/kVA.

The demand requirement for a one year deferral of only the 11kV works and the transformer installation is low. However, the savings are also relatively low, both in absolute terms and in \$/kVA.

It is unlikely the required demand reductions could be achieved cost effectively, especially in a predominately residential area. It is not considered that this investment could be cost effectively deferred.

Recommendation

Based on this analysis it is not considered reasonable to expect that it would be cost-effective to postpone the proposed supply-side solution by implementing demand management strategies.