

DEMAND MANAGEMENT SCREENING TEST

North West Pennant Hills Zone Development

Current Supply Arrangements

The area of interest is feeders 8, 20, 24 and 38 supplied from Pennant Hills zone substation.

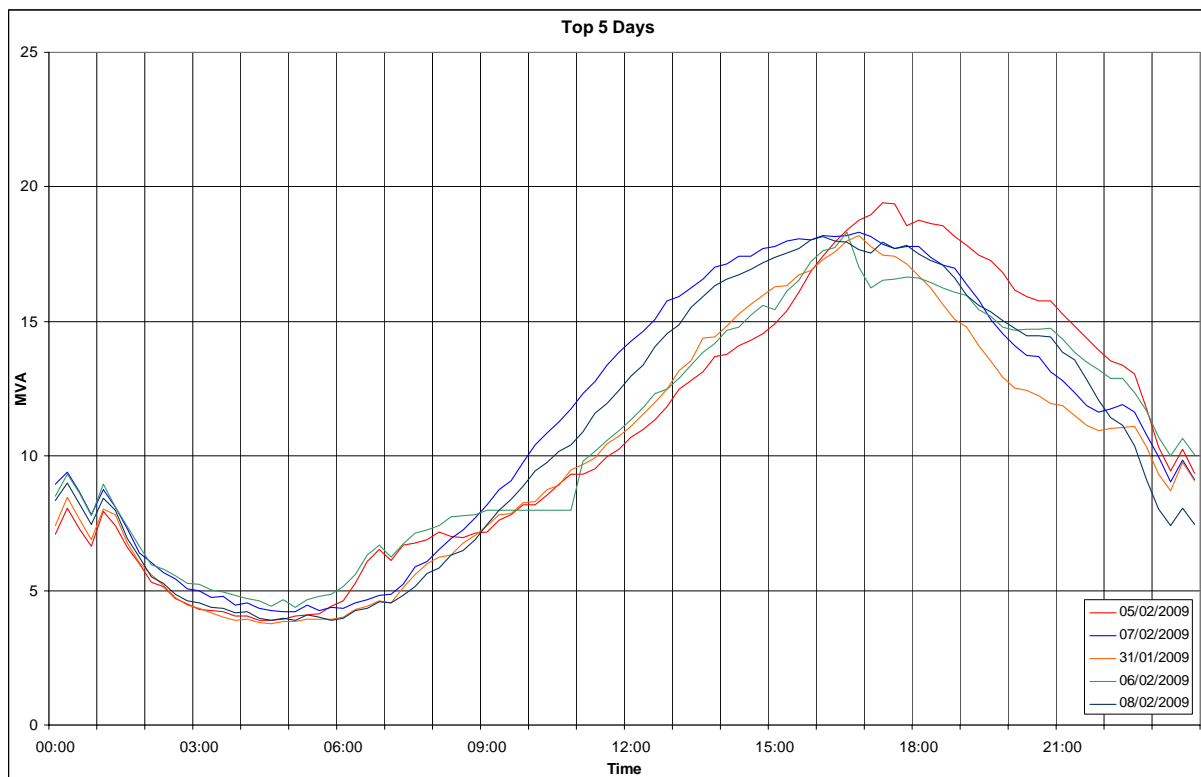
This system is designed so that if any one feeder experiences an outage, the loads on that feeder can be picked up by either of the other two interconnected feeders. This should be achieved with a maximum of 3-5 switching operations, as stipulated in the licence requirement that 11kV customer interruptions in urban areas with a population greater than 5,000 people should be less than 4 hours.

The supply system supplies the suburbs of Dural, Westleigh, Cherrybrook, Pennant Hills, Thornleigh, West Pennant Hills, Beecroft and some parts of Cheltenham.

Supply Capacity and Demand Forecast

The load at Pennant Hills zone is predominately residential and is forecast to grow at 1.5% per annum in summer and 1% in winter.

The graph below shows the top 5 days for summer 2008/09 for the area of interest.



We forecast that demand will have exceeded the relevant capacity limits in summer 2011/12. The worst case loading is described in the table below.

Scenario	Pick up feeder	Rating of critical section (kVA)	Loading (kVA)	DM Requirement (kVA)
Outage of critical section of feeder 20	8	6190	6310	120
Outage of critical section of feeder 38	20	6570	6880	310
Outage of critical section of feeder 24	22	6380	6520	140

For the worst case loadings situation a net load reduction of 410kVA would be required on feeders 20 or 38, and a reduction of 140kVA would be required on feeder 22.

Supply Strategy Option

The preferred supply side option is to lay a new 11kV cable from Pennant Hills zone substation to the north of Cherry Brook via Thornleigh and Westleigh.

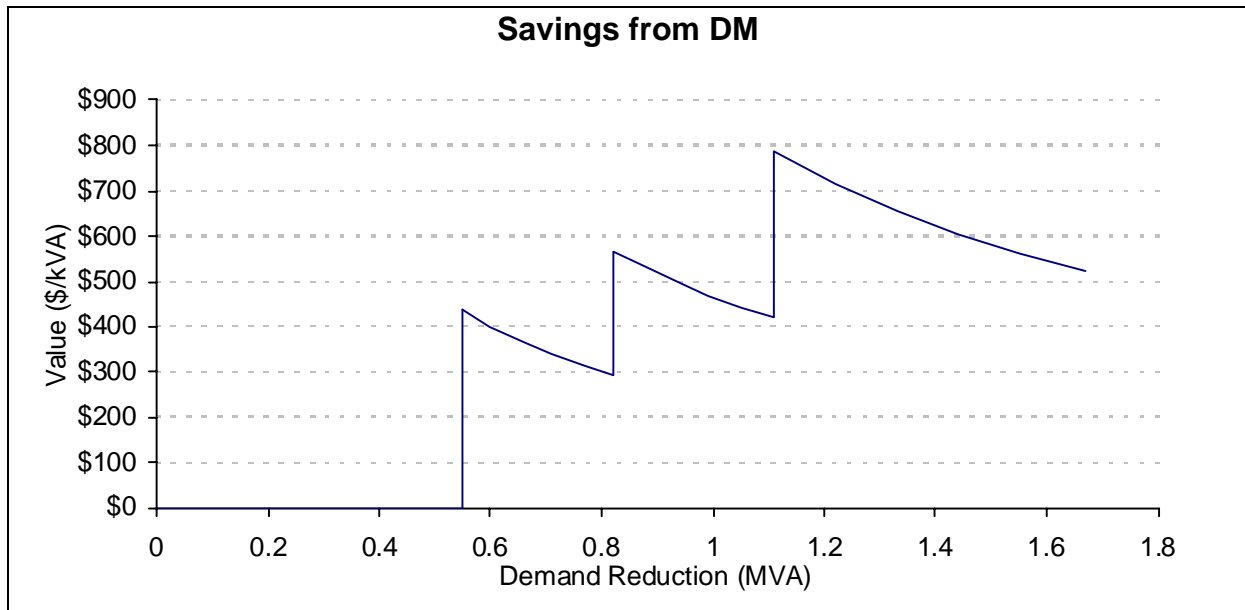
The estimated cost of this project is \$3.75m. The required date for this project is the 1st of December 2011, the decision date for this project is May 2010.

Required Demand Management Characteristics

If a 550kVA reduction could be achieved, the proposed investment could be deferred until summer 2012/13. 550kVA represents 2.8% of the load on the relevant feeders which is low. The potential savings from a one year deferral would be \$240,000 or \$437/kVA, which is moderate.

If an 820kVA reduction could be achieved, the proposed investment could be deferred until summer 2013/14. 820kVA represents 4.1% of the load on the relevant feeders which is low. The potential savings from a two year deferral would be \$470,000 or \$567/kVA, which is high.

If a 1.1MVA reduction could be achieved, the proposed investment could be deferred until summer 2014/15. 1.1MVA represents 5.5% of the load on the relevant feeders which is moderate. The potential savings from a two year deferral would be \$680,000 or \$608/kVA, which is high.



The Demand Management and Planning Project (DMPP) was a project which identified opportunities for demand reductions at large customer sites in the Sydney metropolitan area.

The DMPP has identified 25 opportunities within Pennant Hills Zone load area, on feeders 6, 11, and 26. No opportunities were found in the area of interest.

The load in the area is predominately residential, which increases the difficulty of finding and cost of demand reductions.

For the first year the required demand reduction is small, in both absolute and relative terms and the savings are moderate. For the subsequent years the demand reduction is small in both absolute and relative terms and the savings are moderate in absolute terms and high in terms of \$/kVA.

Given the demand reductions are small, especially in relative terms and the savings in terms of \$/kVA are moderate to high, it is considered reasonable to expect that an investigation might find cost effective demand management measures.

Recommendation

Based on this analysis it is considered reasonable to expect that it may be cost-effective to postpone the proposed supply-side solution by implementing demand management strategies. A demand management investigation will be undertaken.