

DEMAND MANAGEMENT SCREENING TEST

Berkeley Vale Zone 11kV Feeder 4

Current Supply Arrangements

The system under consideration consists of Berkeley Vale zone substation 11kV feeders 4, 6, 11 & 14. They supply a region to the north of Berkeley Vale Zone, including Tuggerah. This area is predominantly commercial and light industrial.

This system is designed so that if any one feeder experiences an outage, the loads on that feeder can be picked up by one or more of the interconnected feeders. This should be achieved with a maximum of 3-5 switching operations, which aligns with the licence requirement that 11kV customer interruptions in urban areas should be less than 4 hours.

These feeders provide the majority of the alternate supply interconnections for each other. In the event of an outage of the critical section of any one of these feeders, the majority of the load would be picked up by the remaining feeders in the group.

Supply Capacity and Demand Forecast

The load at Berkeley Vale zone, including feeders 4, 6, 11 and 14, is forecast to grow at 5.6% per annum in summer and 3.83% per annum in winter. The load in this area is predominantly commercial and light industrial with daytime peaks, with summer peak demand higher than in winter. There are significant new loads expected on the relevant feeders in the near future.

The table below summarises the worst case loading scenario for feeders in the system under review for summer 2008/9:

Scenario	Capacity of limiting section	Peak demand (Including proposed load)
Outage of the critical section of feeder 4	feeder 11 – 6.1 MVA	7.4 MVA
	feeder 6 - 7.6 MVA	8.6 MVA

On the basis of the current load forecast, if this worst case outage occurred at the time of peak demand, the load would exceed the design criteria. This could be resolved for summer 2008/9 by a reduction in load totalling 1.3MVA on feeder 11 and part of feeder 4 which supplies the Westfield complex, and 1MVA from the Tuggerah Business Park on feeder 4.

There are three new load requests totalling an increase in load of 2MVA by summer 2008/09 on feeder 4, which would make the situation worse.

There is a project scheduled to be completed mid 2009 which would remove the need to reduce load on feeder 11 and part of feeder 4 which supplies the Westfield complex. When this project is completed the only need will be to reduce the load on Tuggerah Business Park.

Supply Strategy Option

The preferred supply side option is to create a new 11kV feeder from the existing feeder 12 at Berkeley Vale zone substation, along with some rearrangement of existing network assets. The cost of this project is estimated at \$960,000.

To meet the required completion date of November 2008 a decision on this investment would need to be made as soon as possible.

Required Demand Management Characteristics

To achieve a one year deferral of the proposed investment, we would need to identify and implement 2.3MVA of demand management by November 2008.

The demand reduction would need to occur at two specific locations. The demand reduction would need to occur in summer during the daytime peak, targeting the commercial centres of Tuggerah Westfield and the light industrial area of Tuggerah Business Park. The demand reduction for Tuggerah Westfield is only needed for summer 2008/09.

The demand reduction requirement at the Westfield Tuggerah site is 1.3MVA, approximately 17% of a peak demand of 7.4MVA. The demand reduction requirement at Tuggerah Business Park is 1MVA, 25% of a peak demand of 4MVA.

The saving from a one year deferral would be \$78,600 or \$39/kVA, which is low, both in absolute terms and in dollars per kVA.

To achieve a two year deferral we would need to identify and implement 2.3MVA of demand reduction by November 2008, but the following year, we would only need 1.3MVA of demand reduction (at Tuggerah Business Park).

The saving from of a two year deferral would be \$152,000 or \$58/kVA, which is low, both in absolute terms and in dollars per kVA.

The value of the supply side option is less than \$1 million which we would not normally consider demand management solutions. Even with a significant increase in this cost, the savings would be low.

Given the size of the demand management requirement, the low value of savings from deferral, and the time frame required for an effective solution it is not considered that demand management options would be found cost effective.

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.