

DEMAND MANAGEMENT SCREENING TEST

Western Enfield Zone Development

Current Supply Arrangements

The system under consideration consists of Enfield Zone Substation 11kV feeders 10, 11 and 21. These form a isolated ring-radial feeder network, and supply the areas west of Enfield Zone, including parts of Enfield, Strathfield South and Belfield. The area is mainly residential with some commercial loads.

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.

Supply Capacity and Demand Forecast

The load at Enfield zone is forecast to grow at 3% per annum in summer and 0.66% in winter. Summer is the critical season for this system. There are also some significant new loads expected on the relevant feeders.

The worst case loading under emergency conditions is described in the table below.

Scenario	Pickup Feeder	Limiting Section	Capacity of Limiting Section (MVA)	Summer Day Emergency Load (MVA)	Summer Day Emergency Load forecast (MVA)				
				2007/08	2008/09	2009/10	2010/11	2011/12	
Fault on feeder 10	1, 3, 21	S825 to S1081	2.4	2.7	3.6	3.7	3.8	3.9	
Fault on feeder 11	3	S825 to S1081	2.4	2.1	3.1	3.2	3.3	3.4	
Fault on feeder 21	1, 14	S4211 to S848	2.9	4.6	4.8	4.9	5.1	5.2	

This shows that in summer 2009/10 the forecast demand would be above the licence limits on three different feeders.

Supply Strategy Option

The preferred supply side option is to create a new feeder from Enfield Zone Substation to the vicinity of substation No. 533 Hope St (on existing feeder 21) partly comprising of existing elements of feeders 10 & 21.

The cost of the project is estimated at \$4.54m. Commissioning is proposed for December 2009, and a decision on this investment should be made by December 2008.

Required Demand Management Characteristics

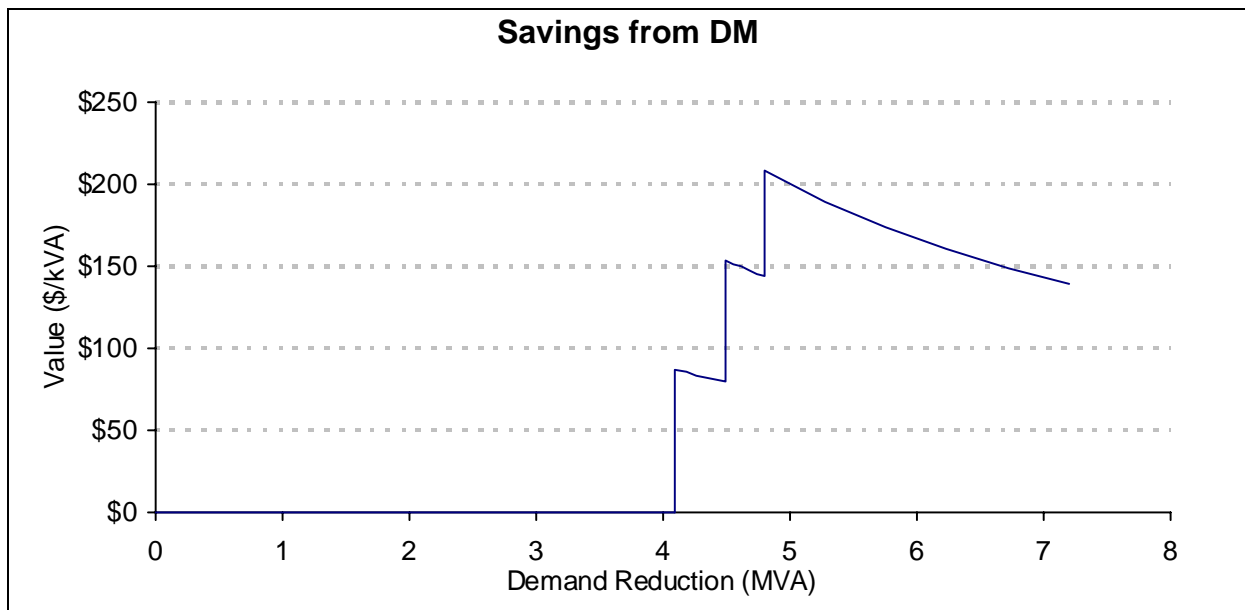
To achieve a one year deferral of the proposed investment, we would need to reduce demand sufficiently to bring all three feeders under the applicable licence limits. There is some potential for the same reductions to improve the situation for more than one feeder if they were located in very specific areas. However, this potential is limited to less than 0.6MVA of the overall requirement.

Using simple aggregated requirements, we would need to identify and implement 4.1MVA of demand management by summer 2009/10. This represents 22% of the total demand of the relevant feeders, which is high.

The savings from a one year deferral would be \$360,000 or \$87/kVA, which is low.

If a demand reduction of 4.5MVA could be achieved then the proposed investment could be deferred by 2 years. The savings from this deferral would be \$690,000 or \$153/kVA, which is moderate.

If a demand reduction of 4.8MVA could be achieved then the proposed investment could be deferred by 3 years. The savings from this deferral would be \$1,000,000 or \$208/kVA, which is moderate.



The demand management requirement is high in both absolute terms and in relative terms (ie as a proportion of total demand). The opportunity for crossover solutions does not significantly reduce the size of the requirement. The savings are low to moderate. The timeframe before an investment decision must be made is relatively short. On balance, it is not considered reasonable to expect that demand management could cost effectively defer the proposed supply side solution.

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.