

## DEMAND MANAGEMENT SCREENING TEST

### Marrickville Zone

#### Current Supply Arrangements

The system under consideration consists of Marrickville zone substation 11kV feeders 32 and 40. They supply a region including Marrickville South and Tempe. This area is a mix of residential, commercial and industrial load.

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.

The feeders provide the majority of the alternate 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.

The ability of this system to meet these requirements is limited by several critical sections of the feeders concerned.

#### Supply Capacity and Demand Forecast

The load at Marrickville zone, including feeders 32 and 40, is forecast to grow at 0.3% in summer and 0.4% in winter. The load in this area is a mix of residential, commercial and industrial load with peak demand between 12pm and 2pm, with summer demand higher than winter demand.

The table below summarises the rating and forecast critical feeder loads under the worst case outage scenarios as they would be in summer 2009/10.

Scenario	Pick up Feeder	Rating of Limiting Section (MVA)	Forecast Load at critical section (MVA)
Feeder 32	Feeder 40	2.1	3.3
Feeder 40	Feeder 32	3.4	3.9

#### Supply Strategy Option

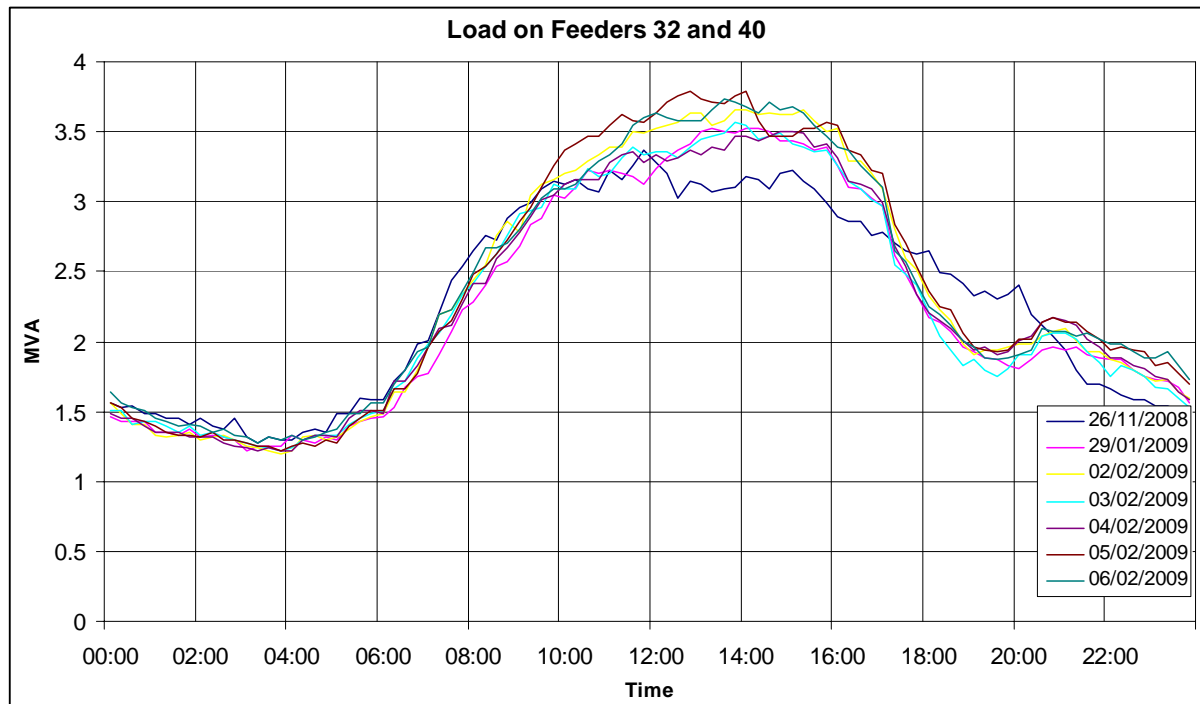
The preferred supply side option is to install new cable and some rearrangement of existing network assets to increase the capacity of feeders 32 and 40.

The cost of this project is estimated at \$2.3m, commissioning is proposed for November 2009, and a decision is required as soon as possible.

## Required Demand Management Characteristics

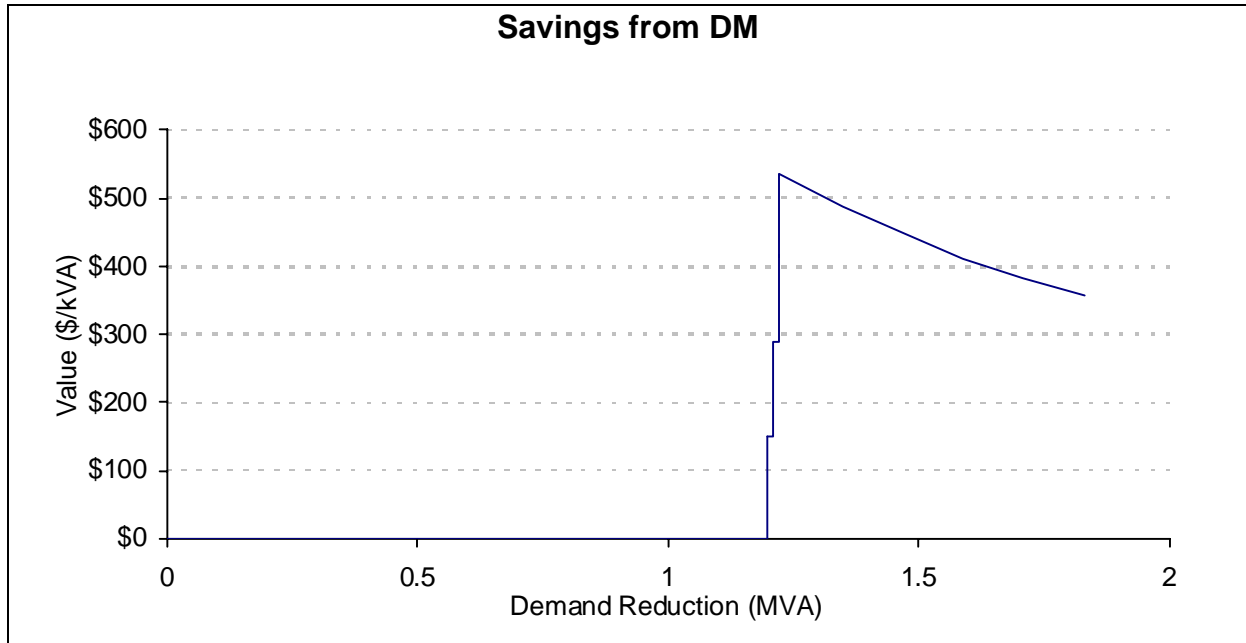
Based on the outage scenarios identified above, a reduction in demand of 1.2 MVA on feeders 32 and 40 would be required to defer the need by one year. The rate of growth is very low, approximately 8kVA a year, which means at the current rate of growth it would be 2021/22 before the load reduction required reached 1.3MVA.

The demand reduction would need to occur in summer, between 8am and 6pm.



To achieve a one year deferral we would need to identify and implement 1.2MVA of demand reduction for summer 2009/10, which represents 32% of the total forecast demand of the relevant feeders which is high. The savings from a one year deferral would be \$180,000 or \$151/kVA which is moderate.

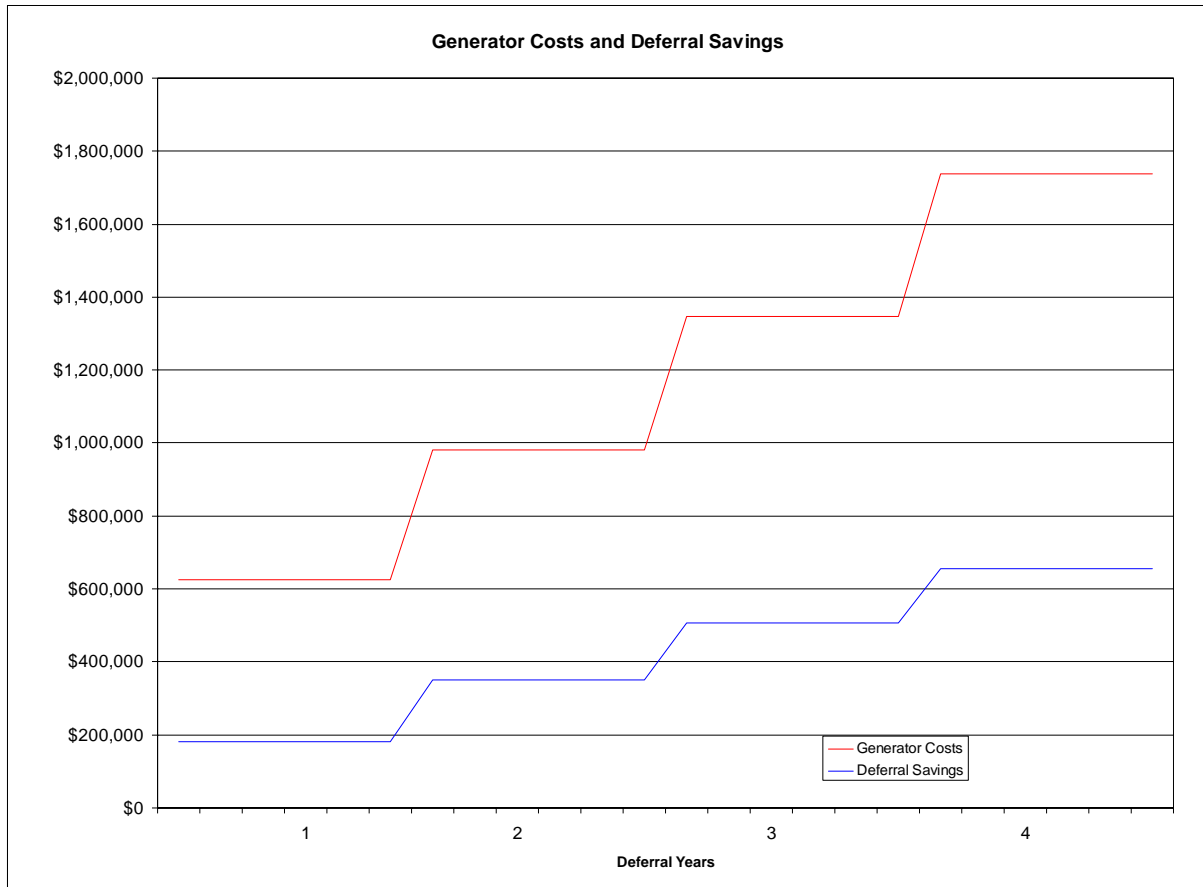
The demand reduction increases by 8kVA a year, so the original 1.2MVA load reduction, plus a further 24kVA load reduction would allow a deferral for up to 2012/13. The load reduction required for 2012/13 represents a 37.1% of the total forecast demand of the relevant feeders, which is high. The savings from a four year deferral would be \$660,000, or \$536/kVA which is high.



The Demand Management and Planning Project (DMPP) identified opportunities in the Sydney metropolitan region for demand management at large customer sites. Although opportunities for demand management were identified in Marrickville Zone substation load area, none of these customers were supplied by the relevant feeders.

Given the DMPP has looked in the area, and no relevant demand management opportunities were identified, there is a low likelihood opportunities on the relevant feeders could be found easily.

The cost of 1.2MVA temporary generator was compared with the possible savings from the projects deferrals and the results are shown below.



The demand requirement is moderate in absolute terms, although it is high in proportion to the total demand on the relevant feeders. While the savings from a deferral are moderate for the first year, the possible savings are high for the following years.

Although the load on the feeders includes industrial loads and commercial loads, the DM&P study did not identify any opportunities for load reductions indicating that the likelihood of finding large demand reductions is low.

The first years demand requirement would need to be found and implemented before November 2009, which could be achieved by a demand management option like temporary generation. Although the possible savings from multiple years of deferral are high, they are consistently exceeded by the cost of temporary generators.

**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.