

DEMAND MANAGEMENT SCREENING TEST

East Matraville Zone Development

Current Supply Arrangements

The system under consideration consists of Matraville Zone Substation 11kV feeders 7, 8, 14, 32, 36 & 37.

These feeders are interconnected, and supply the areas east of Matraville Zone, including parts of Malabar, Maroubra, and Little Bay. The area is a mix of residential and 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

Winter is the critical season for this system, with peak demand in the evening period, however we also forecast that demand would exceed relevant limits in summer. There are also some significant new loads expected on the relevant feeders in the Little Bay and Long Bay area.

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

| Scenario | Pickup Feeder | Limiting Section | Capacity of Limiting Section (MVA) | Winter Emergency Load forecast (MVA) | | |
|--------------------|---------------|-----------------------------|------------------------------------|--------------------------------------|------|------|
| | | | | 2010 | 2011 | 2012 |
| Fault on feeder 14 | 37 | Fdr 37 trunk | 4.1 | 5.9 | 5.9 | 6.0 |
| Fault on feeder 36 | 8 | Fdr 8 between S1170 & S7934 | 4.1 | 5.3 | 5.3 | 5.3 |
| Fault on feeder 36 | 1 | Fdr 1 trunk | 7.6 | 8.2 | 8.2 | 8.3 |
| Fault on feeder 7 | 32 | Fdr 32 trunk | 7.6 | 8.5 | 8.5 | 8.6 |
| Fault on feeder 8 | 1 | Fdr 8 between S2640 & S1345 | 2.4 | 3.4 | 3.4 | 3.4 |

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

| Scenario | Pickup Feeder | Limiting Section | Capacity of Limiting Section (MVA) | Summer Emergency Load forecast (MVA) | | |
|--------------------|---------------|-----------------------------|------------------------------------|--------------------------------------|---------|---------|
| | | | | 2009/10 | 2010/11 | 2011/12 |
| Fault on feeder 14 | 37 | Fdr 37 trunk | 3.6 | 3.8 | 3.9 | 3.9 |
| Fault on feeder 32 | 7 | Fdr 7 between S667 & S35094 | 5.0 | 5.2 | 5.3 | 5.3 |
| Fault on feeder 36 | 1 | Fdr 1 trunk | 7.6 | 8.4 | 8.4 | 8.4 |
| Fault on feeder 7 | 32 | Fdr 32 trunk | 6.8 | 7.9 | 7.9 | 8.0 |

This shows that in summer 2009/10 & winter 2010 the forecast demand would be above the licence limits on a number of different feeders.

Supply Strategy Option

The proposed supply side investment involves upgrading existing feeder 36 from Matraville Zone Substation in conjunction with augmentation of feeder 6, along with feeder 44 from adjacent Maroubra Zone and feeders 14 & 22 from Botany Zone.

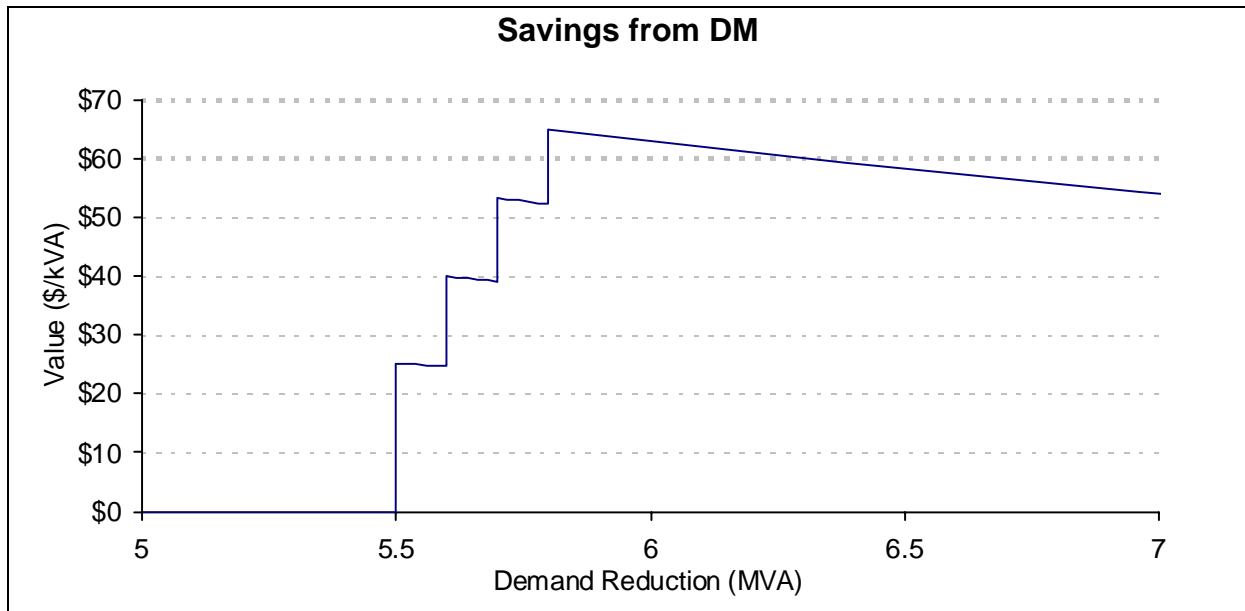
The estimated cost of the works is \$1.2m. The proposed commissioning date is November 2009, with an investment decision to be made as soon as possible.

Required Demand Management Characteristics

If demand could be reduced by 2.2MVA by summer 2009/10 and 5.5MVA before winter 2010, then assuming that at least 2.4MVA of the reduction persists for summer 2010/11, the proposed investment could be deferred by 18 months. The demand reductions would need to occur in the specific locations to ensure that capacity limits were not exceeded for the relevant emergency scenarios. This is 17% of the total demand on these feeders. The savings from this deferral is \$140,000, or \$25/kVA, which is low.

If demand could be reduced by 5.6MVA before winter 2011, with at least 2.6MVA of the reduction persisting for summer 2011/12, then the proposed investment could be deferred by two and a half years. The savings from this deferral is \$220,000, or \$40/kVA, which is also low.

As demand is forecast to continue to grow, longer deferrals would require greater demand reductions.



The demand reduction requirement is large in absolute terms and as a proportion of total demand on these feeders. The deferral value is low, and the timeframe before an investment decision is short.

It is therefore not considered reasonable to expect that this investment could be cost effectively deferred via demand management options.

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.