INDEPENDENT PRICING AND REGULATORY TRIBUNAL

SUBMISSION BY PITTWATER COUNCIL ON UNDERGROUNDING OF ELECTRICITY SUPPLY

1. The level of capital expenditure required for putting electricity distribution cables underground in NSW urban areas (including Sydney and regional centres)

The level of capital expenditure required to underground the electricity distribution network in NSW urban areas appears to be at the centre of much speculation and disagreement. The 'Putting Cables Underground Working Group' (PCUWG) estimated a figure of about \$23.37 billion to put existing overhead electricity and telecommunications cables underground in urban and suburban Australia. Energy Australia claims it would cost \$5 billion alone to underground its own network in the Sydney Region whilst the Sydney Cables Down Under group (SCDU) has calculated (based on figures provided by the Federal Working Group) a cost of only \$1.56 per week per dwelling over 30 years to place electricity underground in the Sydney Basin.

Whilst it is clear that the total cost of placing power underground will be significant, it is misleading and meaningless to quote a daunting lump sum figure which merely promotes the type of inertia that has been a major feature of the underground power debate thus far. To date, the "prohibitive" costs of placing the entire electricity distribution network underground has been a convenient excuse which has enabled electricity suppliers to continue to develop and maintain an inappropriate and environmentally unacceptable aerial cabling network.

2. The feasibility of undergrounding electricity cables with other utility services including telecommunication, and any economy of scale that can be achieved.

Council's previous submissions have supported the multi-utility approach to undergrounding. A significant part of the cost of burying cables is the excavation, backfilling and reinstatement of trenching and hence sharing a trench opening and also ensuring that future capacity ducting is provided, is to be encouraged. This also limits environmental harm and reduces the impact on resident amenity and traffic safety by not having separate trenching works at different times. In Pittwater, this is particularly important because there is a heavy reliance on road reservations (particularly road pavements), for service corridors due to the steep and well vegetated terrain.

3. A comparison of the costs associated with maintaining the current network compared to undergrounding

Evidence from a number of sources suggests that the current cost of maintaining an overhead supply far exceeds maintenance of an underground system. The overhead system is fully subjected to the "elements" in particular wind forces, tree impact, lightning strikes, bushfire, etc. There is also the ongoing costs of tree management, servicing timber poles, wires and couplings.

In 1998, the PCUWG determined that underground electricity distribution systems cost half as much to maintain as an equivalent aerial transmission network. The report further estimated maximum savings for network maintenance and tree trimming costs would total

\$2,651 per kilometre of underground line. This figure is particularly relevant to the Pittwater Local Government Area which is well vegetated and prone to electrical supply interruption caused by environmental factors.

The cost of doing nothing and maintaining the existing transmission system in the long term should also be compared to the cost of undergrounding. As the community becomes ever more reliant on telecommunications, higher performance standards will be expected of electricity suppliers. These performance standards are unlikely to be met by the present aerial transmission network. Aside from the reliability issues and increased maintenance costs associated with overhead cables, the community is also less likely to accept the increasing costs of maintaining a "second-best" aerial transmission system if the long term real costs prove to be higher than those of an equivalent underground system.

On the other hand, it is also important to ensure that all undergrounding works are carried out by utilities in close consultation with local government to ensure that existing road infrastructure is not damaged by burial works and that contractors comply with all relevant guidelines. Otherwise, as is often the case at present, when public utilities undertake works in public road reserves, Councils are usually left to subsidise the actual costs of restoration works. Due to the poor QA procedures and inadequate contract supervision adopted by utility authorities. This is a further drain on limited rate revenue and a hidden cost to the community.

4. The types of costs which are avoided as a result of undergrounding

The types of costs which are avoided are both financial and environmental. Once again, these costs have been well publicised and promoted and include:

- Losses caused by electricity outages Blackouts cause significant disruption and inconvenience but also represent a substantial cost to the community and businesses in lost trade and productivity. The heavy reliance of business on telecommunications technology means that the true costs of outages are not well understood and are ever increasing. A further consequence of outages is power surges when the electricity supply is restored which can cause severe damage to computer equipment and electrical appliances.
- Physical, emotional and monetary costs associated with vehicle collisions involving power poles In 1998, RTA figures showed that collisions with power poles accounted for 10% of road fatalities in NSW and cost the community \$225 million a year.
- **Tree lopping costs** Figures provided by Energy Australia in 1998 indicated that their tree trimming budget totalled \$6.2 million per annum for their supply area. There would also be a significant reduction in the amount of damage and disfigurement done to street trees. Although difficult to quantify, the environmental costs of lopping programs are real and directly affect quality of life and property values.
- Network maintenance cost reductions Apart from the maintenance costs savings calculated by the PCUWG at up to \$1,531 per km per year, energy Australia has admitted that if the existing overhead high-voltage distribution feeders were to be placed underground, it would make the network roughly twice as reliable as it is at present.

- Property values Apart from the reduced damage to tree canopies, the streetscape is also aesthetically improved by the removal of aerial cabling. The improved urban amenity and streetscape appearance is difficult to value however, the State Valuer-General has suggested that putting cables underground may improve property values by up to 5% in some areas.
- **Bushfire risk reduction** SCDU has provided figures showing that aerial powerlines caused some 486 bushfires in urban Sydney in the three years 1994-1997. In light of the substantial environmental and property damage caused by bushfires, this is an added risk that the community should not have to bear.
- Electrocution Downed aerial power cables are not only responsible for outages, but pose a real risk of electrocution to members of the community and emergency services personnel.
- Electrical transmission losses the PCUWG estimated that savings on reduced transmission losses by placing power cables underground could be up to \$292 per km of line each year.
- **Greenhouse gas emissions** A reduction in transmission losses means that less greenhouse gases are created in the production of wasted electricity.

The benefits of undergrounding electricity transmission networks are well known and accepted by the community and electricity suppliers but there remains wide disagreement over costs. It is therefore important that reliability of supply and the public safety aspects of undergrounding power are fully quantified and accurately costed. Similarly, the environmental, aesthetic, psychological and cultural values of trees in the streetscape should not be underestimated and in fact should be given a real value, such that their damage or destruction is incorporated as a true cost in maintaining an aerial electricity network. In this regard, there should also be a fundamental review of Section 48 of the Electricity Supply Act to reflect the true value of street trees,

5. The distribution and timing of benefits to those who benefit including an appraisal of the overall public benefit to the wider community

There are incremental benefits to both electricity suppliers and electricity customers as more of the aerial transmission network is placed underground. Issues of reliability of electricity supply and public safety should be addressed as a matter of priority.

From a planning perspective, however, there is no need to "re-invent the wheel". Due to past unwillingness (on the part of electricity suppliers in NSW) to place cables underground, there is now an opportunity to use undergrounding projects in other states as models to develop a co-ordinated program to place aerial cables underground in NSW. Both the Western Australian and South Australian State Governments have been conducting systematic programs of burying cables in metropolitan Perth and Adelaide over the past 5 year period. A pilot program of burying electricity cables in the Brisbane Metropolitan Area is also well advanced in the planning phase.

SCDU has argued that Sydney's aerial power network could be buried with the introduction of a modest levy of \$1.56 per week and reach a break-even point after 30 years, by which time, the reliability of the transmission system would have been improved for the entire

community and maintenance costs significantly reduced for electricity suppliers. Long before this point in time however, individual consumers would have been receiving direct benefits from a reduction in outages, improved environmental amenity and perhaps cheaper electricity tariffs.

In the Pittwater LGA, for example, due to large tracts of remnant bushland and well treed streetscapes, residential consumers and businesses would derive an immediate benefit by way of a reduction of storm-related outages. In the medium term, say 10 to 15 years, these consumers would benefit from improved environmental amenity and a safe streetscape. Whilst in the long term, they could expect a far more reliable electricity transmission network, reduced electricity tariffs due to lower network maintenance costs and increased opportunities for streetscape beautification and the development of viable wildlife corridors.

6. Options for Funding

With regard to the funding of undergrounding projects, there is a very strong argument for the State Government to play a leading role, particularly in light of dividends earned from the energy industry in NSW which amounted to \$364 million in 2000/2001. The NSW State budget figures show that this was a \$120 million windfall over budget projections.

Similarly, some of the costs of undergrounding should also be borne by the electricity suppliers, who have continued to maintain and develop a fairly antiquated aerial transmission system when superior underground networks could have been designed and implemented. The long-term failure to plan for a better transmission system has resulted in consumers being forced to endure the failings of a "second-best" system and pay the associated financial and environmental costs.

There is much merit in the suggestion by SCDU that a special authority be created, independent of electricity suppliers, with the sole charter of implementing and co-ordinating the burial process which would be contracted out to the private sector. All electricity suppliers would then not own cables, but rent access to a common cable system which would be owned and operated by the special authority. The arrangement could be extended to include other cable networks such as telecommunication cables. In this way, the users who directly benefit would be levied to pay the cost of undergrounding. If windfall dividends derived by the State Government as well as pro-rata annual savings from network maintenance and tree lopping were added annually, the Sydney Metropolitan area could be readily funded as the first stage of a sustainable statewide undergrounding project.

7. Impact on Customers

The impact on customers needs to be carefully considered. Some areas have been previously undergrounded at no cost to adjoining properties. Other properties have paid for undergrounding to "bring forward" the works. In these instances, a differential pricing policy could be implemented to ensure that consumers who had already contributed to the cost of undergrounding were levied equitably.

If the undergrounding is part of an overall integrated strategy to also improve communications such as overhead PSTN and cable internet services, it would be reasonable to implement user pay arrangements, on condition that users receiving a quantifiable benefit are levied according to the level of those benefits. Criteria may also need to be established to ensure that rural and low income customers are suitably subsidised by the State Government to ensure that any levy for undergrounding projects is equitable across the entire community.