

CHAPTER 7

RENEWABLE ALTERNATIVES

Term of Reference (d) the viability of the use of renewable energy sour including hydro-electricity to provide electricity to Queensland consumers.

7.1 As with other issues relating to Eastlink, opinions as to the viability of renewable alternative electricity generating systems were polarised.

7.2 The two power authorities involved believe that alternative electricity generating options have a role but that they cannot supplant the position that Eastlink will hold in the formation of a national grid. *Powerlink* makes it clear that Eastlink has an integral part in a comprehensive Queensland Government energy strategy which also includes demand side management, renewables and cogeneration: 'The policy is not Eastlink or alternative energy - it is Eastlink and alternative energy'.¹

7.3 Opposing this, community groups and individuals argued that Queensland's increasing energy needs could and should be met through a combination of renewable energy generating options, increased attention to demand side management and increased incentives for energy conservation.

Community Opinion

Extent of Community Involvement

7.4 Considerable community resources were invested in submissions to the 'Committee canvassing the range and efficiency of renewable alternatives. For example, the submission by South East Queensland Against Eastlink provided over 100 pages of information about renewable alternatives. The combined Greenpeace/AC17 submission presented an analysis of Queensland's foreseeable electricity needs and the cost effectiveness of Eastlink against various renewables. And the Sustainable Energy Industries Council of Australia sent a comprehensive submission which addressed predictions of energy demand and alternatives for fulfilling that demand. From the submissions sent to the inquiry, the Committee was given a very strong impression that the general public is interested and involved in alternative electricity generating options.

Philosophical Change Needed

7.5 Taken together, the submissions indicated a widespread opinion that reliance on fossil fuels was no longer in Australia's interests because of the global implications of pollution and the greenhouse effect. As indicated by the content of the submissions, many people were not only aware of other options, but were keen for those options to be supported by governments to a greater degree than is happening at present.

7.6 In addition, the view was also frequently expressed that the community would be very willing to participate in energy saving programs. People see such programs as cost effective and able to provide at least partially, if not fully, for the projected increase in Queensland's power requirements over the next decade.

7.7 The prevailing view was that Australia, and in particular Queensland, should diversify its means of electricity generation, move away from large coal-fired power stations, and increase commitment to alternative renewable energy sources and energy conservation measures.² A number of submissions recommended that the Committee read Gavin Gilchrist's book *The Big Switch - Clean Energy for the Twenty-First Century*.

7.8 More generally, the view was expressed that it was time for governments to comprehensively address global environmental problems, and that electricity generation was one important way in which governments could make a significant impact by investing in renewable energy alternatives and fully adopting energy efficiency programs. The benefits of such a policy would extend to employment, and to the expansion of exports throughout the AsianPacific region.

7.9 The opinion was often expressed that a general philosophical change was required for governments to move away from the view that big, centralised electricity generating systems were better than small decentralised alternative renewable systems.

7.10 As summarised in one submission: 'Without this influence, the large conglomerates used to producing power in traditional ways will continue to recommend to government the systems and technology they are used to. Worse, in order to keep the organisations and their own employment intact, there will be a tendency to continue to recommend more of the same, rather than new or different ideas. We will simply end up with more Lake Pedders, as Eastlink surely is'.

7.11 Concern was expressed that the current system of electricity generation in Australia, which directly links profit to the volume of electricity sold, perpetuates thinking along the lines of 'big solutions'. The belief that change is needed was well summarised with the statement that Eastlink is 'last century's solution to next century's needs'.

Alternatives Considered

7.12 The submission provided by South East Queensland Against Eastlink noted:

A range of proven renewable energy technologies are available to provide end-use needs cleanly and efficiently and many are in service in Queensland. These include:

- solar water heaters for pools, homes and commerce
- solar efficient building design
- solar thermal process heat for industry
- solar thermal electricity wind energy systems for electricity and water pumping
- wood heaters and boilers
- process heat and electricity from bagasse
- photovoltaic electrical power supply systems
- mini and micro hydro-electric systems micro hydro-pumping systems
- greenhouses
- crop drying
- timber drying
- salt drying

Research continues into all these technologies and developments to date are very encouraging. Further significant advances will occur before 1998, and enormous advances are likely within the life of any new coal fired power station which may be built in the next few years. Special areas of interest include low cost solar thermal power stations, wind turbines, photovoltaics and remote area power supply systems. Energy storage is another area of progressive development, particularly for electrical energy systems. Many of these technologies are well proven and economical. Others are near economic and become even more so if social and environmental costs are included. Much research is now focused on reducing production costs.

7.13 In summary, Professor Ian Lowe in a recent article argued that: 'all these alternatives look better value economically and politically than carving a swathe through hundreds of kilometres of farmland.'

Economics of Alternatives

7.14 The economic viability of alternatives, compared to Eastlink, will largely depend on the parameters used within comparisons. For example, the cost of photovoltaic cells may not compare favourably with Eastlink if current prices are used. However, if comparisons use anticipated prices, for five years hence when Eastlink would be commissioned, then photovoltaics may well be competitive. More importantly though, if adequate funding is never invested in research, development and initial production of alternative, sustainable energy generation systems, they will never become competitive. Just as conventional sources of power such as coal and gas fired power stations needed massive government support and subsidisation when they were first being developed, alternative systems need strong support before they will become truly competitive.

7.15 When unconventional forms of electricity generation are compared with conventional forms they are frequently disadvantaged. The main reasons for this are, firstly, research and establishment costs of alternative sources are often included in comparisons when they should not be included because similar costs for conventional installations have long been paid for. This favours the continued use of large conventional power stations. Secondly, costs related to environmental damage caused by some conventional forms of power generation (such as coal) are not usually included in comparisons when they should be, because many alternative forms of electricity generation do not have high environmental costs. Opponents of Eastlink claim that the environmental damage caused by the construction of the power line 'may run into millions of dollars'. The inclusion of environmental costs would probably favour small renewable forms of power generation.

7.16 Further it was argued in evidence to the Committee that because Eastlink is narrowly focused on a 'big picture', cost/benefit analyses fail to take into account the potential advantages of decentralised energy strategies, such as regional employment. People believe that it will be hard for power authorities to take on the role of energy service providers offering advice on energy efficient strategies (particularly to large commercial consumers) and to promote energy systems that cause least greenhouse gas production, when they clearly favourable solutions.

7.17 Finally, many people living in rural areas aspire to some degree of self-sufficiency and would prefer to install stand-alone solar systems. However, subsidies provided by large power authorities for connection to the main grid undermine the potential for environmentally sound, self-sufficient energy sources.

Other Solutions - Demand Management & Energy Conservation

7.18 In rejecting the Eastlink proposal, many submissions from Queensland not only called for greater use of alternative sustainable sources of electricity generation, but suggested greater attention to demand management options to reduce power requirements and a shift in thinking from 'consumption' to conservation'.

7.19 A submission from the Australian Democrats stated that energy saving is more cost effective than energy generation at a ratio of about 1:2-3. Estimates of the amount of energy which can be saved through conservation programs are around 20-25%. In Queensland, this would result in about 1000mw of electricity, double that which would be transferred through Eastlink.

7.20 While the QEC claims that there is going to be a 4.9% increase in demand for electricity which will be needed by 1998, to save 4.7% of the State's electricity would only require the installation of solar hot water systems in 33% of the

State's households'. At the moment the penetration rate for solar hot water systems is only 5% in Queensland, while it is 25% in Western Australia and 40% in the Northern Territory.

7.21 Other suggestions for demand management and energy conservation included were:

- to provide incentives for solar hot water;
- off-peak use of freezers and hot water;
- incentives to for home owners to put in insulation;
- compulsory requirement for insulation, solar hot water, off peak connections for freezers, etc in new homes;
- introduce totally flexible working hours to spread the use load;
- more widespread use of solar power;
- increased use of energy efficient lamps;
- architectural advice;
- stand-alone hybrid-systems with servicing agreements;
- change from electricity to gas for cooking, hot water and heating;
- the adaptation of houses designs to increase solar efficiency;
- consumer education;
- price structuring incentives;
- and greater use of energy efficient technologies (appliances).

7.22 In addition, suggestions were made as to how Queensland could increase its generation of electricity without having to construct Eastlink, including; the use of existing power line corridors which already service the major centres by either upgrading current installations or by constructing additional towers along them; the construction of new (alternative) power generation plants where they can be connected directly into existing corridors; upgrade and reactivate closed power stations; and upgrading existing power stations to increase capacity.

Tully Millstream Hydro-Electric Augmentation Project

7.23 The Tully Millstream Augmentation Project is located halfway between Cairns and Townsville, on the Tully River. It would expand the existing Tully Falls Scheme which was built in the 1950s and which is based on the Koombooloomba Dam located in the rainforest catchment of the Upperjully River (a fall of 450m). A new tunnel would drop water direct from the Koombooloomba Dam, 700m to generators deep in the mountains at the level of the coastal plain (water being fed back into the river 19km downstream) and water storage would be supplemented with the construction of two other small dams.

7.24 The new power station would have a -capacity of 600mw, from three 200mw generators. The scheme would have a seven year construction time and a test tunnel has already been driven into the mountain at the site where the power station would be located. The cost of feasibility studies and works to date have been \$26m and the estimated cost of the project is about \$700m in current prices. The estimated maximum workforce during construction would be 1100.

7.25 The Tully Millstream Action Group presented evidence in its submission that the scheme had considerable advantages over other proposals for supplying Queensland's future power needs, including Eastlink. They argued that it was superior in terms of economics, environmental impact and greenhouse gas emissions, and would have other secondary benefits such as tourism, recreation and agriculture (irrigation capacity is built into the scheme).

7.26 Representatives of the Tully Millstream Action Group gave evidence to the Committee at the public hearing in Toowoomba, travelling at their own expense from Atherton. In arguing a case for the project, the Action Group pointed out that the area of real deficiency of electricity supply in Queensland was in the far north, an area which was forced to import 85% of its electricity. Cairns, they noted, is as far from Brisbane as Melbourne is, and Cape York is as far away from Brisbane as is southern Tasmania. North Queensland is rich in resources and has vast tourist potential and the area is expected to have one of the highest growth rates in Australia.

7.27 In their submission, the Action Group argued that the proposed interconnection between NSW and Queensland was one where two areas of surplus electricity supply were being linked. Eastlink, they concluded, was 'not a satisfactory solution to the supply of large power deficiency in the north of Queensland'.

7.28 However, while a number of other submissions to the Committee were in support of the Tully Millstream project, others submissions opposed it. These submissions argued that although hydro-electricity is a clean and renewable resource, the construction of supplementary dams, roads and tunnels raises other land management issues. Simply by the nature of their location, dams inundate areas of highly fertile soils. These soils are now in short supply and the protection of prime agricultural land is important. Both NSW and Queensland have already lost large areas of its most fertile agricultural lands through inundation.

7.29 Other submissions commented that the Tully Millstream project was potentially environmentally damaging as it would result in the loss of a large area of important animal habitat and would reduce the region's biodiversity. If the site was in a world heritage area, two submissions argued, the project would probably not be allowed. One submission concluded that the Tully Millstream project was 'brilliantly engineered but environmentally challenging .

7.30 In discussing potential environmental impact, the Tully Millstream Action Group emphasised that because the scheme is an augmentation of an existing scheme, the environmental impact would be minimal. Powerlines would follow existing routes and the proposed new access road would be located in open woodland, not rainforest.

Conclusion

7.31 Throughout the current inquiry, the Committee was impressed by the knowledge and enthusiasm that community groups and individuals hold for alternative renewable forms of electricity generation.

7.32 The Senate Standing Committee on Industry, Science and Technology in its 1992 report, *Gas & Electricity - Combining Efficiency and Greenhouse*, stated that Queensland would be an ideal place to further research on renewables and recommended that the development of a national grid must not preclude the further development of options such as demand management, cogeneration and new technologies.

7.33 Despite the outcome of the Eastlink interconnection, the Committee reiterates the opinion expressed in the *Gas and Electricity Report* that Queensland would be an ideal place for increased research and development of renewable energy options.

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