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Electrical energy has dramatically changed the structure of society over the past 110 years and there are many indicators that show that change in the energy sector will continue with further consequent changes in society. The wide-spread distribution infrastructure for electrical energy, the development of small, efficient electric motors and the development of small, powerful computers has meant that almost all energy-requiring tasks can be performed and controlled in any location by individuals rather than in large factories. There has been a rapid development and cost reduction of small-scale electrical energy generation, particularly by photo-voltaics. The energy efficiency of electric lighting has dramatically improved through the rapid introduction of LED technology. Heat pumps have tripled the efficiency of electric space heating and water heating when compared with electric resistance heating. Solar heating of water has also replaced electric resistance heating. The rapidity of these changes appears to have surprised many large-scale generators, regulators and politicians, upsetting established business models and causing them to take an extremely defensive attitude. Battery storage of electrical energy, apparently initially spurred by interest in electric vehicles but boosted by recent regressive retail electrical energy pricing policies, is now undergoing rapid development with the promise of similar cost reductions.

Government appears to be in a conflicted position regarding these developments. As owner of traditional electricity generation and distribution systems, governments have a large investment in the status quo and appear to expect a continuing return from that investment. However the developments have the potential to make some of the past investment redundant. A free-market economy would allow sectors that fail to adapt to technological change to go into decline. However, government may be tempted to protect its electrical energy investment through restrictive regulation rather than encouraging adaption to new technology. This has the potential to cause significant future distortion in energy markets and to cause uncertainty for potential investors in new technology.

I have concerns regarding governance issues in Tasmania's government-owned energy businesses and their regulation. Politicians seem only too keen to step in and take credit for "good news" developments but rapidly step back and loudly proclaim the independence of institutions when adverse decisions have been made. I have a concern that government uses the electrical energy supply system to provide welfare support to the disadvantaged of Tasmania's society. I would like to see strategy adopted where more transparency occurs and where energy subsidies are made, they should be taken from business dividends, not from business revenues. Outcomes would be the same, transparency would be much improved.

I believe that commentary on the Australian electricity market as a whole does not necessarily apply to Tasmania in particular. The large coal-fired power stations of other states have particular limitations. I believe that the Tasmanian government should take advantage of the inherent positive properties of hydro-electricity generation because the Tasmanian system already represents a ready

ability to store energy and to provide a rapid response to varying electricity demand. As a consequence Tasmania is well suited for integration of other renewable electrical energy sources that are intermittent, such as wind and photo-voltaics. If these sources ever became a major fraction of electrical energy production then the Tasmanian hydro-electric system could be readily adapted to pumped storage. The Tasmanian system is also well placed to deal with changes that might occur with the introduction of electrified transport.

The main area of Tasmania's energy demand not met by electricity is transport and motive power. Tasmania now uses liquid petroleum products for these purposes. As Tasmania is at the end of the global and Australian supply chains for these products and because Australia does not fulfil its obligations to the International Energy Agency in that it does not maintain a three month stored supply of these products, Tasmania is particularly vulnerable to supply shortages and to price fluctuations. As mentioned above, battery technology and cost is undergoing rapid change. Tasmania used to have systems in which a major portion of public transport was by electric energy through trams and trolley buses. Reinstatement of earlier systems using the same technology would not be practicable. However innovation might allow electric Tasmanian public transport systems using different technology. For example, in the past Seattle, Washington state, USA operated a hybrid trolley bus system, the vehicles using either overhead electric power or on-board diesel engines. A modern hybrid vehicle might carry on-board batteries and might utilise wireless charging technology at each terminus to achieve a better result, with no need for overhead cables. Similar technology might be used for partial electrification of the rail system.

Regarding private road transport, Tasmania is well placed to become a leader in electric vehicle technology and implementation. Any decrease on dependence of imported fossil fuels and use of locally produced electrical energy would have to be to Tasmania's economic benefit and would significantly reduced the risks to which Tasmania is currently exposed. Because of Tasmania's hilly topography, with its consequent reduction on the effective range of electric vehicles, recharging infrastructure would have to be developed to keep battery costs down.

I believe that Tasmania should adopt an innovation strategy with respect to energy that keeps abreast of and demonstrates technologies such as wireless energy transmission. Microwave-rectenna and laser-photovoltaic techniques are examples. These techniques might be used for connecting low-impact energy production from mini-hydro or mini-wind generation to the grid without having to clear and maintain transmission line reservations. They might also be used for electric-vehicle farming in which an electric-tractor is supplied its energy from a central transmission point on the property.

I believe that Tasmania should adopt an agile, nimble energy strategy that would enable the state not to be restricted but to be able to take advantage of all technological developments in energy capture, generation, storage, distribution and usage.