



# **HOUSE OF REPRESENTATIVES**

**STANDING COMMITTEE ON INDUSTRY, SCIENCE AND TECHNOLOGY**

**Reference: Effects on research and development of certain public policy reforms**

**CANBERRA**

**Thursday, 28 May 1998**

**OFFICIAL HANSARD REPORT**

**CANBERRA**

**HOUSE OF REPRESENTATIVES  
STANDING COMMITTEE ON INDUSTRY, SCIENCE AND TECHNOLOGY**

Members:

Mr Bruce Reid (Chair)

Mr Beddall (Deputy Chair)

Mrs Bailey	Miss Jackie Kelly
Mr Martyn Evans	Mr Marek
Mr Richard Evans	Mr Allan Morris
Ms Gambaro	Mr Nugent
Mr Jenkins	Mr O'Connor
Mrs Johnston	Mr Zammit

The committee will inquire into and report on the effect of public policy changes, over the last ten years, in the areas of corporatisation, privatisation, outsourcing and competition policy reform on the matters listed below:

the amount of R&D being carried out in Australia;

the nature of the R&D being undertaken (that is, basic or applied);

the relevance of the R&D to the commercial needs of industry;

the level of investment in research infrastructure and equipment;

the scientific and technological skills base and the demand for scientists, technologists and engineers; and

the education and training opportunities for future research staff.

**WITNESSES**

**ORCHISON, Mr Keith William, Managing Director, Electricity Supply  
Association of Australia Ltd, Level 11, 74 Castlereagh Street, Sydney,  
New South Wales 2000 . . . . . 160**

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STANDING COMMITTEE ON INDUSTRY, SCIENCE AND TECHNOLOGY

*Effects on research and development of certain public policy reforms*

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Present

Mr Reid (Chair)

Mr Martyn Evans

Mr Marek

Mr Richard Evans

Mr Zammit

Mr Jenkins

Committee met at 1.04 p.m.

Mr Reid took the chair.

**ORCHISON, Mr Keith William, Managing Director, Electricity Supply Association of Australia Ltd, Level 11, 74 Castlereagh Street, Sydney, New South Wales 2000**

**CHAIR**—Welcome. I declare open this fifth public hearing of the inquiry into the effects on research and development of public policy reform. I am pleased to see you again, Mr Orchison. I remind you that the proceedings here today are legal proceedings of the parliament and warrant the same respect as proceedings in the House. The deliberate misleading of the committee may be regarded as a contempt of the parliament. The committee prefers that all evidence be given in public, but should you at any stage wish to give evidence in private you may ask to do so and the committee will give consideration to your request. Would you like to make an opening statement before we proceed to questions?

**Mr Orchison**—Yes, I would welcome that opportunity. May I say on behalf of my association that we welcome the opportunity to appear before you. We are quite appreciative of the wide range of information that this inquiry has elicited from submissions to date. It is very useful to us and I am sure to other parties who are involved in research, as well as obviously to the parliament.

I preface the comments I am going to make by making the point that, with regard to overall energy policy as it relates to greenhouse issues, my association strongly supports the balanced role that the federal government has taken in seeking to meet both its environmental responsibilities and Australia's economic needs. I thought the Minister for Foreign Affairs summed up the situation well on 21 May when he stated that, in the context of greenhouse, Australia and the government will attach a high priority to maintaining the country's competitiveness. That is certainly a sentiment with which my association associates very strongly.

With regard to energy R&D, however, we do have concerns with the present approach. I think it is fair to say that this relates to the quality of the approach rather than to criticism of particular areas that the government has chosen to support. I think it is also important that I should make the point to the committee that since we put our submission to you the federal government has brought down the budget for 1998. We very much appreciate the undertaking in the budget that the government will sustain its commitment to the cooperative research centres program.

We share the view that was put to this committee by Professor Peter Cullen on 23 March that the CRCs are an outstanding example of the linkage between the users of knowledge and the providers of knowledge. Certainly, their seven-year contracts go some way to overcoming the short-term approach that many of us criticise. On the point of CRCs, I think it would be of interest to the committee if I cited one example, and that is the Victorian based CRC on brown coal utilisation. It is pursuing research into the commercial application, amongst other things, of advanced pressurised fluid bed combustion which aims to lift the efficiency of power production from this fuel so that a

cut in greenhouse gas emissions of the order of 30 per cent may be achieved.

In Victoria and South Australia that would represent a reduction of greenhouse gas emissions of some 15 million tonnes a year against the 45 million tonnes that are emitted. The technology also offers export opportunities of significance to the region. To put that cut in emissions into perspective, the Snowy system replaces some five million tonnes of greenhouse gas a year from coal fired power. The CRC that is based in Victoria dealing with brown coal is a good example of Australia pursuing a sensible approach to energy research. That particular CRC is supported by four of the members of ESAA—Loy Yang Power, Yallourn Energy, Hazelwood Power and Optima Energy in South Australia.

If I can turn back to the issue of policy, we would like to note that we have a fundamental concern that the government, following the dispatch of ERDC, is not taking an early opportunity to review its overall approach to energy research. We believe this needs to be done in the context of the sustainable energy white paper, which is also still outstanding business.

Our view—and it is a view, I know, that is shared by other industry associations—is that Australia, as a leading energy economy, should have a plan to stay among the world leaders in energy R&D not only for existing technologies but also for ultimate technologies and renewable energy. The path that we are taking in Australia with regard to commercialising fuel cells and solar cell technology is an example of the active and long-sighted relationship that has existed between researchers and government and industry over the past decade.

Our criticism is not that nothing is happening in energy R&D policy. Our criticism is that the policy approach tends to be ad hoc and it tends to be subject to sudden change—witness the dispatch of ERDC, which, I have to say to the committee, was done without consultation with the industry and other stakeholders.

There is one other point that I would like to take up with the committee. At one of your earlier hearings, the comment was made to the effect that electricity companies virtually spent nothing on R&D. My association last commissioned a study in 1994-95 on electricity R&D, at which time Australia had \$230 million committed to electricity research projects and another \$134 million earmarked for expenditure over the following two or three years. That was an increase in activity from 1992-93 when a study that we had undertaken showed that there were about \$174 million of projects under way. The latest study was built around \$63 million that was being invested in renewable energy projects and \$166 million in sustainable energy activity.

We have not carried out another study in the recent past. We may do so in the not too distant future. But, of course, what has happened since that last study was done is that the electricity supply sector has gone through a massive restructuring, a growing level of privatisation. We, obviously, are full in the stages of major change. But to say that

electricity companies never did any R&D is simply not accurate. I might stop there. I am conscious of the time of the committee. Clearly, from our point of view, R&D remains important, but it now has to be seen in the context of a very changed industry.

**CHAIR**—Thank you very much for that contribution. Probably your industry is one that has seen the most significant changes as a result of changes of public policy in respect of every state in Australia. The opportunity for you to be here today and to allow us to put some questions to you is much appreciated. Also, the comments you made in respect of the R&D that is still being undertaken within your industry is very important. I would like to ask you your view—and it probably can only be a view—of where the intellectual property of a lot of the former authorities resides now and whether it is readily available to industry to enable them to use that, and whether that is in fact possible, as a basis for their private energy research.

**Mr Orchison**—In those companies that have been privatised, some intellectual property would have been sold with the business. In many cases, the intellectual property is held by universities or other researchers. It is being used by members of ESAA, but it belongs elsewhere. In some cases, that intellectual property has been commercialised into separate companies. The two best examples of that, I guess, are Pacific Solar with photovoltaics and Ceramic Fuel Cells Ltd that has been set up in Victoria, which is a consortium in which ERDC and various of my members and some other industrial companies have shares.

The situation as we now move down the track is that much more of the research is being done specifically for companies. The intellectual property attached to that is a matter for negotiation between those companies and whoever is doing the research. One of the problem areas is that in the past published papers have been used by university members as part of their pursuit of advancement. There are some areas now where the research is being done but the companies do not particularly want it publicised because their commercial advantage is being looked after. That does create some problems for people in the universities.

**CHAIR**—I come back to the criticism regarding the closure of the Energy Research and Development Corporation and the role that is played by the CRCs. How do you see those operating? When you had the ERDC, were you as an industry able to provide funding on a collective basis for some of that research? Will that be taken up by the CRCs?

**Mr Orchison**—The answer to your last question is: I doubt it. I think the two things are separate. There are three CRCs at the moment relating to electricity: one on brown coal utilisation; one on black coal at the University of Newcastle; and one on renewables, which is based in Perth. I do not think there is a flow-over from the ERDC's activities.

As far as ERDC is concerned, we were very involved in its establishment. We were able to nominate people to sit on its board, as were other industry associations. There was a very close degree of consultation between ERDC, my association, other energy associations and members of the industry in pursuit of projects. There are a number of public documents available indicating the benefits that were gained from that kind of activity.

It enabled us to get research off the ground in a number of areas where it would have been difficult to do so if we were only using private funds. But I think it is important to make the point that the leverage the Commonwealth was getting out of the ERDC ran from as much as three to one to seven to one. The Commonwealth, in terms of increasing the benefits to Australia of research, was actually getting a return in terms of leverage on the money it invested.

I have been involved in one form or another—working for the private sector at La Trobe University, working for the petroleum industry and now with the electricity industry—with research in this country for the best part of 25 years. The ERDC was one of the most sensible ways of addressing the necessary partnership between government and industry that I have seen. We have made no bones about the fact that we were bitterly disappointed that it was closed down. We believe it is a mistake.

What we would like to see, because there is no point in hankering after the past, is for government to sit down with us and with others who are stakeholders and work out, in the context of the sustainable energy white paper, what research needs we have over the next 20 to 30 years, identify those that are clearly in the private realm, identify those where the help of government is required and then plan over the long term. Until that is done, there is going to be quite strong unhappiness in the energy sector and we are simply putting off work that will have to be done.

**CHAIR**—You have also mentioned that university research does not seem to be able to respond in time to the competitive nature of the electricity industry. What other options are there, if the universities are not responding to do that research? You have mentioned that there could be other organisations. Who are they and how could that be done?

**Mr Orchison**—The university sector, I believe, is learning from its experience with the competitive electricity industry. At the moment we have both state owned companies and private companies competing in the market in Australia. Regardless of their ownership, they are all driven by the need to pursue market share, by the need to be profitable because they are going to need the profits to invest. They demand of their research suppliers what they demand of everyone else—an agreed time line, an agreed cost and, so far as possible in the case of research, an agreed product. Certainly, in the first couple of years the universities had considerable difficulty dealing with it. Some of my CEOs are still trying to recover from being told by a professor in the electricity sector that



their role in life was to provide him with PhD students. They did not quite think that was what their role in life in fact was.

There has been a very bumpy path towards this, but now several things are happening. Firstly, those in universities who are seized of what our needs are, are starting to work with us more closely. Secondly, companies are employing consultants in many of these areas to do work for them. Thirdly, they are looking abroad, because in this market the electricity businesses need to be competitive against existing energy suppliers and any prospective suppliers. They have to be profitable, as I said, in order to be able to pursue their development of technology and services. That does not necessarily mean they have to invest in innovation locally. They will go where they can best obtain it.

A comment was made to this committee by one of your previous witnesses that there was a danger that technology might be brought in here that did not work in Australia. I singularly fail to understand the point, because why would any company, having looked around the world for the best technology available and having found it, want to bring in something that did not work here? We very often have to adapt technology to work in Australia. That is something on which we work with universities and others.

I do not think that this area should be seen as something negative. As you said in your introductory remarks when this hearing opened, there is huge change taking place. It is by and large for the good and we are all learning how to make it work, and that has to include the research sector.

**CHAIR**—Does that also include the players in the industry being a bit reluctant to perhaps provide adequate information to the universities? Is that a problem?

**Mr Orchison**—I think there is a difficulty where members of my association—and we embrace all the companies that are engaged in electricity supply in Australia—on occasions have information that they consider to be perhaps of competitive advantage to someone else. In the past, sharing that information was not a problem because the competition did not exist. It does today, and therefore they are chary about making it available. Again, the research community has to learn to work with my members and how to deal with that.

The issue is not whether the electricity industry engages in research—my word we do—and the issue is not whether there is going to be a wholesale importation of research because we are privatising and so on. The issue is how to make the best research available, regardless of where it is. In Australia's interests, we would argue it is important that a technological base and a base of very well-educated scientists and others be created in this country.

**Mr ZAMMIT**—I refer to your submission in which you say that power production

technology is now mature, that it requires little new R&D, yet you say you are spending on R&D, as I noted, \$230 million and a further \$134 million for the next two to three years. Is that in conflict with what you are saying? Have I misunderstood what you are saying?

**Mr Orchison**—No, I do not think it is in conflict. The mainstream generation technology that we have in Australia now is mature technology. For that capacity, there is very little research that is needed. The business we are in is managing those assets as well as we can, and that in itself requires some research. The areas that we are now moving to are those that relate to dealing with what we will have to do in the future, both in the context of greenhouse and other matters. Yes, we do have mature generation capacity. Yes, we are doing research in other areas. We cannot afford to stand still.

**Mr MARTYN EVANS**—Obviously, the Energy Research Corporation, the passing of which we all sadly note, was one way of government being involved in a broader, pre-competitive market in the old environment of publicly owned electricity assets. We have now moved into a new environment without that and where there is large scale privatisation of this. The CRCs are one potential response to that, but CRCs of their nature are focused on a particular issue—brown coal, black coal. They are very important but narrowly focused and with a limited lifespan.

Although the industry does spend a fair bit on R&D, as Mr Zammit notes, that is not that large in relation to the total amount—the turnover of the industry, the investment in capital, the investment in generating potential and the ongoing revenue. Is there some facility that we need to look at which will be at the pre-competitive stage but be an ongoing commitment to R&D by the industry as a whole, because the national interest will require that all companies address greenhouse issues, environmental questions and energy conversion efficiency? That can be done at a pre-competitive point. What view does the industry have as to how we might move to that position where we have a shared ongoing initiative for research?

**Mr Orchison**—There are two points that I would make in response. The first is that I quite agree with you that the CRCs are specifically designed to attack various issues, but they are all doing work that should have an impact on greenhouse emissions abatement, and I cited the example of brown coal. I think the second point is that we, as a country, need those companies that are engaged in energy production, government and other stakeholders in this to have an idea of where we want to be 20 years from now and to identify, as best we can in 1998, the areas where we do not have the necessary skills.

You can either look round the world and import them, because from an efficiency point of view if it is available in Palo Alto in California why in particular do we want to reinvent it in Melbourne, or in areas where we can see opportunities we should be working together, government and ourselves, to try to create a new technological niche. As an example, clearly there is going to be more renewable power being applied to grid

connected electricity. There may well be some difficulties in maintaining reliability of supply for technical reasons, where you have lots of small sources of power as opposed to several very large ones. That is an area where it is both in the social interest of Australia and in the commercial interest of my members to deal with the problem, but it is a problem that is down the road. If you are a company engaged in the competitive market today, it is not your first priority.

The role of government in this, as I perceive it, is to work with industry to reduce time scales to bring areas of technology and innovation on and to identify areas where if we start doing something now we will not have a problem in 10, 15 or 20 years time. Of course many of these things—and a classic example of this is the work we are doing in Australia in fuel cells and in rooftop solar cells—are very exportable. I believe that this committee and everybody else who deals with this area understands the rationale for government being involved. What we need to do at the moment is to put a bit of a hard edge on it and make sure that it is actually being done in a consistent and sensible fashion. Frankly, that is about all we are asking for.

**Mr RICHARD EVANS**—Can I please move you out of your market specific industry and talk in more general terms about research and development. We have had a lot of evidence in this committee inquiry about the 150 per cent down to 125 per cent, and I get the feeling from a lot of the witnesses who have promoted this idea that it is affecting the area of R&D that they are not really long-term R&D thinkers; they are more immediate financial gain return from R&D. In a general sense, what is your view of Australia's attitude towards R&D? Is it an evolving thing? Is it stagnant? Are we R&D driven? That is part A of the question. Part B of the question is: do we emphasise enough in our development of managers at university level the importance of R&D and, if we do not, should we?

**Mr Orchison**—In response to part A, I think Australia has to get its mind around the fact that we are in competition with other countries to gain whatever competitive edges we want in these areas, and that includes providing a more livable environment. There many other aspects of it, and I think that we have lost sight of the fact that there are competing countries that are promoting research much better than we do.

Like most of you, I inhabit the airport lounges rather more than I would prefer to, and there is a magazine called *Shares* available in one of the lounges at the moment which has an article in it about Sustainable Technologies Australia which is just moving some of its operations to Switzerland because it has been given a better commercialisation opportunity there—it is the second D in RD&D. I happened to read this on my way to Canberra. I think that is an example of the answer to part A, which is that we are not in competition with ourselves; we are in competition with the world at large.

If it is the view of government that there should be a form of support for research through the tax system, then it behoves government to create something that is actually

effective. If what you have is a system that is bureaucratic and where the benefit is not that much greater over the cost of participation in that system, then it is not working very well. That is the answer to part A.

I think the other aspect of it is that we would be keen, from the electricity industry point of view, to be able to partner with companies that are in the electrical or manufacturing and services side and other companies in order to be able to pursue opportunities. That does involve some form of support, and taxation support is a more competitive way of doing it than simply handing out subsidies. We are not very enthused at the idea of subsidies.

**Mr RICHARD EVANS**—What about the aspect of management training and putting emphasis on R&D?

**Mr Orchison**—In relation to management training, I think there is a general view in the business community that we really do have to do more. I saw Mr Ken Baxter, the former secretary to the Premier's Department in New South Wales, commenting in the *Financial Review* this morning that not enough emphasis was being placed either within companies or in the education system on producing managers who are capable of thinking strategically.

There is a problem finding enough managers in this country who have the wherewithal to enable us to compete. Electricity has been operating on an island in Australia, literally and figuratively, for all the time there has been a public electricity supply, until now. We are now very conscious that we are part of global competition. If industrial growth does not occur in this country, those of my members who are investing very large sums of money in buying electricity companies are not going to get a proper return on their investment. We have a particular interest in Australia's industrial growth. As every member of this committee understands, Australia's industrial growth can be achieved only by making us more competitive. Part of being more competitive is having managers who are out there at the best edge of management. I think it is generally accepted that we do not have as many of them in this country as we need.

**CHAIR**—Mr Marek has an interest in the coal industry, amongst other things.

**Mr MAREK**—Mr Orchison, I want to talk about global competition. I will give you a scenario. You might have an operation that wants to mine magnesium, around Rockhampton way, for instance. There is a power station there called Stanwell. You may have a company that wants to set up a magnesium mine and to process the magnesium. I am led to believe it is probably cheaper for them to set up the plant over the border in New South Wales somewhere rather than near Stanwell because of the cost of electricity—it is actually too dear to buy the electricity. This fictitious company might say, 'We won't do it in Australia at all. We'll go somewhere else where we can get hydro electricity.' With that scenario, the question is: where are we going wrong with the

charging of electricity from state to state? Why is there a problem with a large company being able to set up right next to a power station and being able to buy their power cheaper?

**CHAIR**—I do not know whether we can bring that into our terms of reference in respect to R&D, unless Mr Orchison has something to offer in terms of R&D involvement in the price of power.

**Mr Orchison**—Let me try to assist Mr Marek. I do not want to become involved in your not terribly fictitious company because that is a matter of commercial negotiation between some of my members and the would-be developers of that project. The issue in relation to electricity pricing is that overall in Australia, in terms of the reliability of supply and the prices that can be negotiated in a competitive market by a very large user of electricity, we are amongst the most competitive in the world. The question of location is a matter of commercial negotiation.

To deal with it in the context of R&D, I think that the issue relates really to how well the companies that are going to be competing for that kind of business can manage their assets in order to pull the prices down. That includes how you reduce losses over the high voltage wires; it includes whether you can offer a relatively low emission environment while still maintaining a low price. Part of what we are trying to do in the business—because the sort of example that Mr Marek is quoting involves us in something that will be a 25- or 30-year activity—is to ensure that over that time we are able to offer a sustained quality environment.

That means that my members have got to be looking not just at what they can immediately provide but at how they can ensure that R&D is an important part of that, and at how they can ensure that they will go on providing a service. One of the things that the Commonwealth government is supporting, and that my industry has supported, is research into superconductivity. There is a project at the University of Wollongong that relates to the use of superconductivity on transmission and distribution lines. If that, in due course, means that we can reduce the losses on the eastern seaboard in moving power up and down that market, then we will be more competitive as a market with other markets in South America or wherever.

The superconductivity support, which was started by one government, continued by this, and in which my industry has got an ongoing interest, is a very good example of the kind of long-sighted research we need to be engaged in, because apart from its advantages to Australia, the potential export of something of that kind is simply enormous. It runs to scores of billions of dollars of potential market in the region and elsewhere. So there is a connection, but it comes down at the end of the day to our being able, over time, to stay where we are today, which is at the forefront of electricity supply in the world.

**Mr JENKINS**—Specifically, do you wish to expand on the comments made in the

submission about such things as R&D START, especially changes to the definition of eligible R&D? Do you want to make any comments about the reduction from 150 to 125 per cent? If you had looked at a 20 per cent reduction in the figures, that is irrelevant; halving it is irrelevant, because some have said it nearly wipes out any concession or any reason for people to decide to take up the concession.

**Mr Orchison**—I would make three points in response to that. The first is that, during the last 20 years in this country, we keep going off in new directions in research support. There is a concern amongst all who are stakeholders in it about the consistency of policy. The second is that rather too often we are dealing with fairly complex bureaucratic processes and there is a disinclination amongst business to become involved in it. As ESAA, we do not possess any statistics at the moment that would enable me to comment on the value of the START project to the electricity industry one way or the other, but I am aware of reports that have appeared in the media suggesting that it has not been taken up to anything like the extent that other support was in the past. However, I cannot, as ESAA, comment on that side of it. I think the other aspect of it is that all of this has to be worked out, as I have said several times to the committee this afternoon, in consultation with the stakeholders, and in the context, as far as energy is concerned, of a sustainable energy policy. There is an aphorism to the effect that if you do not know where you are going any road will do. We simply cannot afford that, Australia being the energy intensive economy that it is, and knowing the circumstances that we have to deal with over the next two decades, because that road has been mapped out for us by Kyoto and other areas.

We cannot afford to be chopping and changing; every time there is a new government there is a new direction in this. That is not the way business can work. It is inappropriate for the kind of community we have got to be in the new decade. Our belief is that the starting point is to have a sustainable energy policy that we can sign up to, government can sign up to, hopefully that oppositions will, in the broad, and then to start building policy from that.

**CHAIR**—There is a comment in your submission that, with regard to Australian electric power utilities, some of the international companies have acquired them and the R&D has been sent overseas. Do you have specific examples of that? Is it a general practice with international companies that have come into it? How can we overcome that, if it is the case?

**Mr Orchison**—I think the situation is that international companies will always move their research focus around. It is to be expected. Australia benefits over the long term, I believe, from that, but we need to be conscious, as Australians trying to sustain a level of technological capability in this country, that in that kind of market situation there is a need for government and ourselves to create an environment where innovation is being pursued here for good reasons and that benefits from it going abroad are accruing to the nation.

I do not believe that scientists would want to see barriers being imposed to the movement of research information. I do not believe that, given the kind of industry that my industry will be in five or 10 years time, where I imagine there will be both large international companies and some large Australian companies engaged in electricity supply, we would want to be caught in a situation where we were prevented from getting innovation from overseas or selling it overseas.

**CHAIR**—Do you think a free flow of information is possible in this era of competition?

**Mr Orchison**—I think it is already happening in the greenhouse area. Australia and my association are involved in an International Energy Agency activity with 13 other countries, looking at how you capture and sequester CO<sub>2</sub> emissions from power stations. If we are going to go on being a fossil fuel based country, and I suspect we will for many years, that is a very important piece of research. We are sharing that with 13 other countries.

**CHAIR**—Having dealt with the Electricity Supply Association of Australia Ltd for a number of years and also in another life, I thank you very much. If the committee has further questions to put to you in writing, would you be available to answer those?

**Mr Orchison**—We are at the disposal of the committee in any way we can help.

**CHAIR**—Thank you very much. Thank you for your comments today. It is good to see you again.

**Committee adjourned at 1.48 p.m.**