

# ENERGY LAW: THE NEGLECTED ASPECT OF ENVIRONMENTAL LAW

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[In this article, the author discusses the importance of energy use and production to environmental law, and considers possible future developments so as to ensure that energy use and production are consistent with environmental objectives. Having catalogued and criticized the existing Commonwealth and State energy laws, he then discusses possible future legal developments in both the international and the domestic arenas. In relation to international law, the contents of a possible protocol to the Framework Convention on Climate Change are considered. In relation to domestic law, new laws are advocated to achieve the following: to promote energy efficiency and conservation; to promote fuel substitution; to restructure tax incentives; to encourage the private generation of electricity; to revise state legislation regulating electricity utilities; and to revise and harmonize the environmental provisions in the state on-shore petroleum and pipeline legislation.]

## 1. INTRODUCTION

From an environmental perspective, the production and consumption of energy is of fundamental importance for a variety of reasons:

(1) On a worldwide basis, energy constitutes 57 *percent* of all CO<sub>2</sub> emissions into the atmosphere.<sup>1</sup> For this reason, no serious attempt can be made to mitigate the greenhouse effect without reference to energy use in society.

(2) Energy use reaches to the core of the present debate on sustainable development. The World Commission on Environment and Development (the *Brundtland* report) stated that energy efficiency and conservation measures are one of the key elements of sustainability,<sup>2</sup> and that energy efficiency should be the cutting edge of national energy policies for sustainable development.<sup>3</sup>

(3) Energy security is an important, though well disguised, aspect of international diplomacy. Threats to a nation's energy supplies may be sufficient to lead to armed conflict, as illustrated by the intervention of the United States after the Iraqi invasion of Kuwait in 1991.<sup>4</sup>

(4) Many environmental problems, such as air pollution and acid rain, are caused largely by the use of energy.

In light of the significance to the environment of energy use, it is astonishing that the role of energy in society is given very cursory treatment in legal circles.

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<sup>1</sup> See Fowler, R.J., 'International Policy Responses to the Greenhouse Effect and their Implications for Energy Policy in Australia' in Swaine, D.J. (ed.), *Greenhouse and Energy* (1990) 462. The figure of 57 *percent* was calculated by the U.S. Environment Protection Agency and applies to the United States. The actual figure may vary from country to country depending on its energy mix.

<sup>2</sup> World Commission on Environment and Development, *Our Common Future* (1990) 213.

<sup>3</sup> *Ibid.* 240.

<sup>4</sup> On this subject see, e.g., Belgrave, R., Ebinger, C.K. and Okino, H. (eds), *Energy Security to 2000* (1987).

This is largely true in all common law countries, and is particularly true in Australia. In this regard, it is interesting to note the following:

(1) Environmental law has traditionally focused on the adverse effects of energy use, but has largely ignored the energy source itself. Thus, for example, we have strict state laws regarding air and water quality standards,<sup>5</sup> but no laws at all governing the choice of fuels for energy production. In other words, the law concentrates on the effects rather than the causes of pollution.

(2) Very little recognition is given in legal circles to the potential role of the law in developing clean energy technologies. Thus, for example, the legal debate on the introduction of clean coal technologies, combined cycle plants, cogeneration, renewable energy plants and various forms of energy conservation is in very short supply.<sup>6</sup> In addition, there are no textbooks or casebooks on energy law.<sup>7</sup>

(3) Except at the Universities of Adelaide and Wollongong, energy law is not taught as a distinct subject at any Australian law school. In other law schools, the subject is either ignored in its entirety, or its discussion is limited to petroleum law, taught as an adjunct to mining law. In these cases, the use of energy is primarily taught from a developmental and production standpoint rather than from an environmental perspective.

(4) The legal profession is lagging well behind other professional disciplines in its recognition of the environmental significance of energy.<sup>8</sup>

The role of this paper is to enhance the awareness of lawyers to the importance of energy production and consumption to environmental law, and to discuss possible future developments so as to ensure that energy use in the future is consistent with environmental objectives.

## 2. ENERGY LAW TODAY

Before we can discuss future legal developments, it is necessary to examine the current state of energy law. At present, the following laws exist in Australia:

(1) Commonwealth legislation controlling the off-shore development of petroleum and natural gas.<sup>9</sup>

<sup>5</sup> See, e.g., Clean Air Act 1961 (N.S.W.); Clean Waters Act 1970 (N.S.W.); Clean Air Act 1963 (Qld); Clean Waters Act 1971 (Qld); Clean Air Act 1984 (S.A.); Water Resources Act 1976 (S.A.).

<sup>6</sup> The present author has tried to remedy this situation by writing a number of articles relating to legal aspects associated with the introduction of renewable energy and energy conservation technologies. See, e.g., Bradbrook, A.J., 'Energy Conservation Legislation for Industry' (1992) 10 *Journal of Energy and Natural Resources Law* 145; Bradbrook, A.J., 'The Development of Energy Conservation Legislation for Private Rental Housing' (1991) 8 *Environmental and Planning Law Journal* 91; Bradbrook, A.J., 'The Role of the Courts in Advancing in Use of Solar Energy' (1989) 9 *Journal of Energy Law and Policy* 135; Bradbrook, A.J., 'The Contents of New Geothermal Legislation' (1987) 5 *Journal of Energy and Natural Resources Law* 81; and Bradbrook, A.J., 'The Access of Wind to Wind Generators' [1984] *Australian Mining and Petroleum Law Association Yearbook* 433.

<sup>7</sup> Cf. the position in the United States, where several books and papers relevant to energy law and its reform have been published. See, e.g., Zillman, D. and Lattman, L., *Energy Law* (2nd ed. 1991); Tomain, J.P. and Hickey, J.C., *Energy Law and Policy* (1989).

<sup>8</sup> See, e.g., Fowler, J.M., *Energy and the Environment* (2nd ed. 1984); Majumdar, S.K. (ed.), *Energy, Environment and the Economy* (1981); Majumdar, S.K. (ed.), *Environmental Consequences of Energy Production* (1987); Hohmeyer, O., *Social Costs of Energy Consumption* (1988).

<sup>9</sup> Petroleum (Submerged Lands) Act 1967 (Cth). 'Mirror' state legislation exists in all States and the Northern Territory: Petroleum (Submerged Lands) Act 1982 (W.A.); Petroleum (Submerged Lands) Act 1982 (N.S.W.); Petroleum (Submerged Lands) Act 1982 (Vic.); Petroleum (Submerged Lands) Act 1982 (S.A.); Petroleum (Submerged Lands) Act 1982 (Tas.); Petroleum (Submerged Lands) Act 1982 (Qld); Petroleum (Submerged Lands) Act 1981 (N.T.).

(2) Non-uniform state legislation (except in Tasmania and the Australian Capital Territory) governing the on-shore development of petroleum and natural gas.<sup>10</sup>

(3) State hydro-carbon pipeline legislation (except in Tasmania and the Australian Capital Territory).<sup>11</sup>

(4) State laws creating and regulating the relevant state electricity authorities.<sup>12</sup>

(5) Various state legislation concerned with licensing of electrical workers and contractors and safety issues in relation to the use of electricity.<sup>13</sup>

(6) Miscellaneous energy conservation laws of recent origin. These include laws regarding energy consumption in buildings (Victoria),<sup>14</sup> and laws requiring certain types of domestic appliances to be labelled for energy consumption (Victoria, New South Wales and South Australia).<sup>15</sup>

(7) Commonwealth legislation establishing the Australian Nuclear Science and Technology Organisation with powers in respect of the exploration and marketing of uranium and the promotion of research into matters associated with uranium and atomic energy.<sup>16</sup>

(8) Special taxation provisions relating to the prospecting and mining of petroleum.<sup>17</sup>

Energy law is noteworthy for the fact that it is almost entirely statute-based. Apart from significant constitutional law cases relating to the respective division of powers between the Commonwealth and the States regarding jurisdiction over petroleum exploration and development off-shore,<sup>18</sup> there has been little indigenous case law in this area.<sup>19</sup> Given the traditional conservatism of the judiciary in providing non-statutory remedies, there appears to be little likelihood that common law will ever play a significant role in the development of energy law.<sup>20</sup>

<sup>10</sup> Petroleum Act 1955 (N.S.W.); Petroleum Act 1958 (Vic.); Petroleum Act 1923 (Qld); Petroleum Act 1967 (W.A.); Petroleum Act 1940 (S.A.); Petroleum Act 1984 (N.T.).

<sup>11</sup> Pipelines Act 1967 (N.S.W.); Pipelines Act 1967 (Vic.); Petroleum Pipelines Act 1969 (W.A.); Energy Pipelines Act 1981 (N.T.); Petroleum Act 1940 (S.A.) part IIB.

<sup>12</sup> Electricity Commission Act 1950 (N.S.W.); State Electricity Commission Act 1958 (Vic.); Electricity Act 1976 (Qld); State Energy Commission Act 1979 (W.A.); Electricity Trust of South Australia Act 1946 (S.A.); Hydro-Electric Commission Act 1944 (Tas.).

<sup>13</sup> See, e.g., Electricity Supply (Industries) Act 1963 (S.A.); Electrical Workers and Contractors Licensing Act 1965 (S.A.).

<sup>14</sup> Building Regulations 1991, made pursuant to the Building Control Act 1981 (Vic.).

<sup>15</sup> Various regulations requiring energy labelling have been made pursuant to the Energy Administration Act 1987 (N.S.W.) s. 38; State Electricity Commission Act 1958 (Vic.) ss57 and 111; and Electrical Products Act 1988 (S.A.) sub-s. 8(1). See, e.g., State Energy Commission (Energy Efficiency Labelling) Regulations 1987 (Vic.) S.R. No. 88 of 1987; Energy Labelling and Standards (Refrigerators, Freezers and Refrigerator-Freezers) Regulation 1986 (N.S.W.) Gaz. No. 185, 28 Nov. 1986; Energy Labelling and Standards (Refrigerative Air Conditioners) Regulation 1987 (N.S.W.) Gaz. No. 131, 14 Aug. 1987.

<sup>16</sup> The Australian Nuclear Science and Technology Organisation was established by the Australian Nuclear Science and Technology Organisation Act 1987 (Cth). Pursuant to sub-s.4(1) the Organisation consists of the same body corporate as existed previously in respect of the Australian Atomic Energy Commission. The powers of the Organisation are contained in the Atomic Energy Act 1953 (Cth).

<sup>17</sup> Income Tax Assessment Act 1936 (Cth) ss 124-124AR.

<sup>18</sup> *New South Wales v. Commonwealth* (1976) 135 C.L.R. 337; *Pearce v. Florenca* (1976) 135 C.L.R. 507. See also *B.H.P. Petroleum Ltd v. Balfour* (1987) 61 A.L.J.R. 345 (re: royalty payments for petroleum products).

<sup>19</sup> Note that many property law cases of general application have relevance to the issue of the classification of mining and petroleum titles. On this issue see, e.g., Wallace, E.W., 'Stamp Duty Aspects of Mining Interests and Transactions' (1980) 2 *Australian Mining and Petroleum Law Journal* 274, 288 ff.

<sup>20</sup> For an analysis of the role of the common law in relation to the development of renewable energy and energy conservation see Bradbrook, A.J., 'Resource-Use Conflicts: The Role of the

In the writer's opinion, the present energy laws are inadequate from an environmental perspective in a number of different respects:

(1) Although the need for increased energy efficiency in all sectors of society has been recognized by the Commonwealth and the States,<sup>21</sup> this concern has not yet been reflected by legal developments. Australia has not yet developed comprehensive energy efficiency laws. Such laws would be environmentally desirable, and would also assist the country's problem of foreign indebtedness.<sup>22</sup>

(2) No recognition is given by the law to the need to encourage fuel substitution. While Australia has large reserves of coal, the continued use of this mineral for energy production will become increasingly problematic in light of coal's large carbon-dioxide emissions and its deleterious effect on air quality. Even more significantly, despite recent discoveries in the North-West Shelf, Australia's proven reserves of petroleum are in decline and large increases in the importation of hydrocarbon fuels appear very likely in the medium to long term.<sup>23</sup> Alternative fuels must be encouraged. Australia is particularly well-placed climatically to exploit wind energy<sup>24</sup> and to take the lead in the development of a solar hydrogen industry.<sup>25</sup> At present, however, despite rapid advances in technology in these fields, the political will appears to be lacking to introduce laws to encourage these developments.

(3) The role of the government in stimulating new directions in energy policy development by means of direct grants or loans, or by means of taxation incentives, has not been adequately explored. Especially in the field of renewable energy and energy conservation, financial stimulation can be of critical importance in hastening the development of desired objectives.<sup>26</sup> In comparison with many other industrialized nations, the Commonwealth and State Governments have been reluctant to act in this area. Direct grants and loans to energy producers

Common Law' in Saunders, J.O. (ed.), *Resource-Use Conflicts* (1992); Bradbrook, A.J., 'The Role of the Courts in Advancing the Use of Solar Energy' *op. cit.* n.7.

<sup>21</sup> See, e.g., Ministry for Planning and Environment (Victoria), *The Greenhouse Challenge — The Victorian Government's Response* (1989); Department of Resources and Energy (Australia), *Energy 2000: A National Energy Policy Review* (1986) 9.

<sup>22</sup> As the costs of building new large-scale fossil fuel-fired power stations are colossal, there is a need to adopt all available means to minimize the need for new power plant. Energy conservation measures and demand-side management programs have an important role to play. See, e.g., State Electricity Commission of Victoria, *Demand Management Development Project, Final Report* (1990); Energy Mines and Resources Canada, *Demand Side Management in Canada* (1988).

<sup>23</sup> 'As Product Demand Rises, Renewed Danger Signs from Supply Downturn' (1988) 25(4) *Petroleum Gazette* 3, 7. Recent statistics show that between 1987 and 1991, Australian imports of crude oil jumped from 7,723.8 megalitres to 13,387.1 megalitres: Australian Institute of Petroleum Ltd (Melb.), *Oil Industry Statistics* (1992).

<sup>24</sup> The National Energy Advisory Committee reported that many coastal regions of Australia are well endowed with wind resources with annual energy productions of between 3,000 and 4,500 kWh per kW of installed wind capacity possible: National Energy Advisory Committee, *Renewable Energy Resources in Australia* (1981) 6.1 ff. The most favourable sites are in Western Australia, from Cape Naturaliste to Albany; in South Australia, from Ceduna to the Koorong; and the Bass Strait islands and the west coast of Tasmania.

<sup>25</sup> See, e.g., Veziroglu, T.N. and Barbir, F., 'Solar Hydrogen Energy System: The Choice of the Future', presented at World Clean Energy Conference, Geneva, November 1991; Ogden, J.M. and Williams, R.H., *Solar Hydrogen: Moving Beyond Fossil Fuels* (1989).

<sup>26</sup> For a discussion of financial stimulation in this context see, e.g., California Energy Commission, *Solar and Wind Technology: Tax Incentive Impact Analysis* (1986) Report P500-86-010; Deering, C.L., 'Solar Energy and Energy Conservation Bank' in Buck, L.E. and Goodwin L.M. (eds), *Alternative Energy — The Federal Role* (1982) ch.3.

have occasionally been offered, but only on a piecemeal, *ad hoc* basis.<sup>27</sup> A similar problem exists in respect of taxation incentives.<sup>28</sup> Some incentives have been offered in the fields of energy conservation and fuel substitution, but never on a concerted basis.

(4) The current state legislation governing the creation and operations of the various state electricity authorities<sup>29</sup> is inadequate. While each Act specifies in meticulous detail the constitution of the authority, there is very little attention given to its duties. In most cases, the legislation was drafted decades ago and pre-dates current environmental concerns, particularly the need for energy conservation and fuel substitution. These issues do not feature in the legislation at all.<sup>30</sup>

(5) The current monopoly given by legislation to the statutory electricity authorities over electricity generation has had the unintended effect of preserving the traditional reliance on coal and natural gas for electricity generation, and the stifling of initiatives in other areas. Thus, for example, in comparison with the United States and Germany, the use of cogeneration<sup>31</sup> has been very low in this country.<sup>32</sup> The major reasons for this have been the reluctance of the state electricity authorities to offer realistic buy-back rates to owners of cogeneration plants, and the failure of the law to grant to cogenerators any legal rights to secure back-up supplies of electricity at fair rates, or to sell excess electricity either to the relevant electricity authority or to other electricity consumers. This position can be contrasted with other countries where cogenerators are entitled by law to sell excess electricity generated by them to the local electric utility at fair rates.<sup>33</sup>

(6) The existing state on-shore petroleum legislation is in many respects anachronistic from an environmental perspective. While the legislation is long on management regimes for petroleum exploration and development, it tends to be short on environmental safeguards. Much of the present controls are left to voluntary codes of practice agreed to by oil producers. Another problem is that the lack of uniformity of state requirements leads to waste and inefficiency in some cases.

<sup>27</sup> See the discussion of this issue in Bradbrook, A.J., 'The Use of Income Taxation Incentives to Promote Renewable Energy and Energy Conservation' [1990] *Australian Mining and Petroleum Law Association Yearbook* 1, 31.

<sup>28</sup> For example, the Income Tax Assessment Act 1936 (Cth) ss 82EA-82EM granted a taxation deduction of 40 percent of the capital cost incurred by a taxpayer in acquiring or constructing a non-oil-fired plant to replace an oil-fired plant. This provision was introduced in 1979 and was phased out in 1984. Sections 82KM-82KS introduced a system of taxation deductions for expenditure in respect of home insulation. This was very short-lasting: it was inserted into the Act in 1981 and abolished in 1983. On this subject see generally Bradbrook, *op. cit.* n.27.

<sup>29</sup> *Supra* n.11.

<sup>30</sup> Two exceptions exist: see State Electricity Commission Act 1958 (Vic.) sub-ss 12(2) 20(2); State Energy Commission Act 1979 (W.A.) para. 27(7)(d).

<sup>31</sup> Cogeneration is the simultaneous production of electrical or mechanical energy and thermal energy. Cogeneration is sometimes referred to as 'combined heat and power' or 'total energy plant'. For a discussion of cogeneration technology see California Energy Commission, *Cogeneration Handbook* (1982) Report P500-82-054; Cross, F.B., 'Cogeneration: Its Potential and Incentives for Development' (1979) 3 *Harvard Environmental Law Review* 236.

<sup>32</sup> See Bradbrook, A.J., 'Legal Aspects of Promoting Energy Cogeneration' (1989) 6 *Environmental and Planning Law Journal* 332. For a discussion of the position in the United States see Cross, *op. cit.* n.31; Lawrence, W.H. and Minan, J.H., 'Solar Energy and Public Utility Rate Regulation' (1979) 26 *University of California Los Angeles Law Review* 550.

<sup>33</sup> In the United States, the relevant legislation is the Public Utility Regulatory Policies Act 1978, 16 U.S.C. ss 791-796; 824-825; 2601-2645. Germany also has similar legislation: Federal Law Gazette, vol. I, 14 December 1990, 2633.

### 3. FUTURE DEVELOPMENTS IN ENERGY LAW

#### 3.1 *International Law*

One of the most rapidly developing areas of international law in recent years has been international environmental law.<sup>34</sup> This area of law has evolved out of the recognition of the fact that pollution frequently transcends state boundaries, and that it is no longer sensible to pretend that environmental issues can be determined without reference to international law. This is particularly true in respect of atmospheric pollution, and has led to the adoption of the Framework Convention on Climate Change, formulated at the Rio Conference on the Environment and Development in June 1992.

Unfortunately, while the Climate Change Convention contains many broad statements and general commitments, it does not contain any specific targets for the reduction of carbon-dioxide emissions into the atmosphere. This is left to the initiative of member states, many of whom are reluctant to take unilateral action for fear of imperilling their economic position. For this reason, the international community will need to negotiate one or more protocols to this Convention. As energy use is primarily responsible for global warming, it seems axiomatic that there should be a specific protocol relating to energy use. Such a protocol would need to impose limits on the burning of fossil fuels, possibly by reference to the amount of CO<sub>2</sub> emissions related to energy use. An alternative approach would be to agree on a firm commitment to the introduction of alternative fuels and energy conservation measures, which would have the effect of reducing the use of fossil fuels. The suggested contents of such a protocol have been discussed by the writer in an earlier paper.<sup>35</sup> In brief outline, each party to the protocol would commit itself to the following courses of action, which would form the basis of ten separate articles:

(1) To enhance the development and use of energy conservation and renewable energy technologies, as far as it is practicable, and to minimize the use of fossil fuels.

(2) To ensure that newly-constructed buildings designed for either domestic or commercial use shall comply with minimum designated performance standards for energy consumption.

(3) To ensure that all designated appliances shall conform with minimum performance standards and be clearly labelled with reference to their average energy consumption.

(4) To encourage the use of independent power production to the maximum extent practicable, and to establish a system whereby independent power producers have the right to sell energy to the relevant local electric utility at fair and reasonable prices.

(5) To examine the energy intensity of all industrial processes, with a view to minimising the use of energy where appropriate.

<sup>34</sup> See, e.g., Ruster, B., *International Protection of the Environment* (1990); Caldwell, L.K., *International Environmental Policy: Emergency and Dimensions* (1984); Iwama, T. (ed.), *Policies and Laws on Global Warming: International and Comparative Analysis* (1991).

<sup>35</sup> Bradbrook, A.J., 'The International Legal Development of Energy Conservation and Renewable Energy Technologies' (1992) 9 *Environmental and Planning Law Journal* 31.

(6) To take appropriate measures to reduce the use of fossil fuels for road transportation.

(7) To encourage the use of solar energy by all appropriate means for both domestic and commercial uses, to remove all unnecessary barriers to the practical application of solar energy and, where appropriate, to establish legal protection for the right of solar access.<sup>36</sup>

(8) To encourage the use of wind energy by all appropriate means for both domestic and commercial uses, and to remove legal restrictions on the erection of wind generators, except for those restrictions imposed for safety or environmental reasons.

(9) In countries where substantial reserves of geothermal energy resources are located, to establish an appropriate legal management regime designed to ensure the effective exploitation of the resource.

(10) To maximize the use of demand management techniques and technologies<sup>37</sup> in relation to electricity generation in order to minimize the need for new fossil fuel-fired generating stations, and to ensure generally that fossil fuels are only utilized where no economically viable alternatives exist for the application of renewable energy resources or energy conservation measures.

### 3.2 Domestic Law

In addition to an international protocol safeguarding the environment from the adverse effects of energy production and consumption, national laws are required to redress the inadequacies from an environmental perspective of the present energy laws, as discussed in detail above.<sup>38</sup> In Australia, the majority of energy law is within state jurisdiction. Environmentally, the existence of differences between the statutes of the various States makes little sense, as the need for environmental safeguards transcends state boundaries and applies with equal weight to each part of the country. There is no reason to have differing standards in each State, as the States do not have vested interests to protect. Thus, it would seem desirable to have uniform state legislation, or perhaps even a referral by the States of the relevant powers to the Commonwealth.

What new laws are required? I would suggest the following:

#### 3.2.1 *New Laws Promoting Energy Efficiency and Conservation*<sup>39</sup>

In light of the present dearth of laws in Australia relating to energy efficiency and conservation, new laws are required on a wide range of matters: building

<sup>36</sup> Solar access is the right of direct access of the sun's rays to solar collector panels for a certain specified period of time each day without shading caused by buildings or vegetation. For a discussion of solar access see Bradbrook, A.J., *Solar Energy and the Law* (1984) ch. 2.

<sup>37</sup> Demand management is 'the planning and implementation of those utility activities designed to influence customer use of electricity in ways that will produce desired changes in the utility's load shape — i.e. changes in the time pattern and magnitude of a utility's load': Edison Electric Institute, *Demand-Side Management* (1984) vol. 1, 7. For a discussion of demand management techniques and technologies see, e.g., Energy, Mines and Resources Canada, *Demand-Side Management in Canada* (1989); Department of Industry, Technology and Resources (Victoria), *Demand Management Development Project — Final Report* (1990); Edison Electric Institute, *Demand-Side Management* (1984) vols 1-3.

<sup>38</sup> See *supra* nos 20-32 and accompanying text.

<sup>39</sup> For a general discussion of this issue see Bradbrook, A.J., *The Development of Energy Conservation Legislation in Australia* (1991) Report ERDC-94.

design and construction, rental buildings, appliance efficiency, industry and transport.

In relation to building design and construction,<sup>40</sup> it is submitted that new laws combining forms of regulation (by means of building regulations or performance-based standards) and stimulation (by way of financial incentives) should be introduced. The existence of regulations would ensure that new buildings reached a minimum prescribed threshold standard of energy performance, while financial incentives could be designed so as to encourage builders and landowners to exceed the minimum standard.

In relation to rental buildings,<sup>41</sup> the existing law provides no incentives for either landlords or tenants to install energy conservation measures. In relation to residential premises, it is submitted that legislation is required to make the energy efficiency of the premises the legal responsibility of the landlord. In the case of commercial premises, it is submitted that the legal duty to make the premises energy efficient should depend on the length of the tenancy. Where the tenancy is of short duration, it would seem reasonable to expect the landlord to pay for the installation of energy conservation measures because of the high value of the landlord's reversion in the property in comparison with the tenant's possessory interest. Conversely, where the tenancy is of long duration, it would seem reasonable to expect the tenant to pay the relevant costs. These changes would be effected by means of changes to the relevant landlord and tenant statutes.<sup>42</sup> In addition, an income tax deduction or a credit/rebate should be allowed to the landlord for the cost of purchasing and installing energy conservation measures.

As for appliances, it is suggested that new appliance efficiency legislation is required.<sup>43</sup> The central feature of this proposed legislation would be a provision prohibiting the sale of appliances which failed to comply with a prescribed efficiency standard, and allowing the Governor-in-Council to prescribe in the regulations efficiency standards in respect of any appliances. The energy labelling laws currently in effect in New South Wales, Victoria and South Australia<sup>44</sup>

<sup>40</sup> For a detailed discussion of this issue see Bradbrook, A.J., *Energy Conservation Legislation for Building Design and Construction*, Canadian Institute of Resources Law (1992). The position in the United States is discussed in Thompson, G.P., *Building to Save Energy: Legal and Regulatory Approaches* (1980); Wood, B.M., 'Energy Conservation: Government Mandated Utility Programs for Residential and Commercial Buildings — An Expensive Way to Save' (1981) 24 *Howard Law Journal* 183; California Energy Commission, *Building Energy Efficiency Standards* (1988) Report P400-88-001.

<sup>41</sup> For a detailed discussion of this issue see Bradbrook, A.J., 'The Development of Energy Conservation Legislation for Private Rental Housing' *op. cit.* n.6. The position in the United States is discussed in Counihan, R.H. and Nemtsov, D., 'Energy Conservation and the Rental Housing Market' (1981) 2 *Solar Law Reporter* 1103; California Energy Commission, *Energy Conservation in Rental Housing — Conference Proceedings* (1985) Report P400-85-013.

<sup>42</sup> For residential premises, the relevant legislation would be the residential tenancies legislation in effect in all Australian jurisdictions (except Tasmania): Residential Tenancies Act 1987 (N.S.W.); Residential Tenancies Act 1980 (Vic.); Residential Tenancies Act 1978 (Qld); Residential Tenancies Act 1987 (W.A.); Residential Tenancies Act 1975 (S.A.); Tenancy Act 1979 (N.T.); Landlord and Tenant Act 1949 (A.C.T.). For commercial premises, the relevant legislation is: Conveyancing Act 1919 (N.S.W.); Property Law Act 1958 (Vic.); Property Law Act 1974 (Qld); Law of Property Act 1936 (S.A.); Property Law Act 1969 (W.A.); Conveyancing and Law of Property Act 1884 (Tas.).

<sup>43</sup> For a detailed discussion of this issue see Bradbrook, A.J., 'The Development of Energy Efficiency Laws for Domestic Appliances' (1990) 12 *Adelaide Law Review* 306. The position in the United States is discussed in California Energy Commission, *California's Appliance Standards: An Historical Review, Analysis, and Recommendations* (1983) Report P400-83-020. Note also 'National Appliance Efficiency Standards are Law' (1987) 8(2) *Wisconsin Energy News* 3.

<sup>44</sup> *Supra* nn. 13-14.



should be preserved despite the recommended introduction of the appliance efficiency legislation, and should be extended to apply to all states and a greater range of appliances.

Energy conservation in industry could be promoted by a variety of regulatory or financial measures.<sup>45</sup> One possibility would be for state governments to impose minimum efficiency or performance standards for various specified types of industrial equipment. New industrial equipment would be required to meet the standards before being permitted onto the market in Australia. Consideration should also be given to the enactment of legislation requiring energy officers to be established by industry. The task of these officers would be to monitor energy consumption and to suggest various methods of reducing consumption. Another possible measure would be the imposition of a statutory requirement that companies be required to spend each year a designated percentage of their salary payroll or profits towards implementing energy conservation methods. This latter system would be analogous to the employer training guarantee charge.<sup>46</sup> Financial measures could consist of the creation of an investment allowance or the establishment of a specific deduction in respect of the cost of the purchase and installation of industrial energy efficiency measures.

Energy conservation in transport could be promoted by a variety of possible means which could be enacted in combination: the introduction of various changes to road management laws designed to encourage energy conservation; modifications to existing state urban planning legislation so as to encourage urban consolidation and so reduce the need for transport; and the use of fuel-consumption standards and energy labelling laws to increase the efficiency of motor vehicles.<sup>47</sup>

### 3.2.2 *New Laws Promoting Fuel Substitution*

Perhaps the most widely debated form of fuel substitution in recent years has been the adoption of nuclear electricity.<sup>48</sup> This form of energy production has been treated very differently across the world. It has been enthusiastically welcomed in countries such as France and Belgium, where more than 75 percent of electricity is generated by nuclear energy. In some countries, such as Denmark and New Zealand, it is officially shunned. Many other countries, such as the United Kingdom and Switzerland, have limited quantities of nuclear generation, but have ceased building new nuclear electric plants. Australia allies itself with those countries which have not adopted the nuclear option. Indeed, in Victoria legislation prohibits the use of nuclear electricity for any purpose.<sup>49</sup>

<sup>45</sup> For a detailed discussion of this issue see Bradbrook, A.J., 'Energy Conservation Legislation for Industry' (1992) 10 *Journal of Energy and Natural Resources Law* 145.

<sup>46</sup> Established under the Training Guarantee Act 1990 (Cth) and the Training Guarantee (Administration) Act 1990 (Cth).

<sup>47</sup> For a discussion of this issue see Crandall, R.W. and Graham, J.D., 'The Effect of Fuel Economy Standards on Automobile Safety' (1989) 32 *Journal of Law and Economics* 97; Walsh, M.P., 'Motor Vehicles and Global Warming' in Leggett, J. (ed.), *Global Warming: The Greenpeace Report* (1990) 273 ff.; Newmann, P. and Kenworthy, J., *Cities and Automobile Dependence: An International Sourcebook* (1989); E.S.D. Working Group, *Final Report-Transport* (1991).

<sup>48</sup> See, e.g., Flavin, C., *Reassessing Nuclear Power: The Fallout From Chernobyl* (1987) Worldwatch Paper 75; Lenssen, N., *Nuclear Waste: The Problem That Won't Go Away* (1992) Worldwatch Paper 107; Kriesberg, J., *Too Costly To Continue: The Economic Feasibility of a Nuclear Phase-Out* (1987); Greenhalgh, G., *The Future of Nuclear Power* (1988); Sims, G., *The Anti-Nuclear Game* (1988).

<sup>49</sup> Nuclear Activities (Prohibition) Act 1983 (Vic.).

It is beyond the scope of this paper to analyse in detail the various arguments of the pro- and anti-nuclear lobbies. If nuclear electricity is established in this country, legislation will be required to establish a management regime, and a system of licensing of power plants.<sup>50</sup> Such legislation would doubtless be a bonanza for environmental lawyers. However, it is submitted that this is unlikely to occur in the near future. Although the use of nuclear power would assist the cause of reducing greenhouse gas emissions into the atmosphere, it would seem that this factor is more than outweighed by the risk of a Chernobyl-style or Three Mile Island-style nuclear accident and the environmental problems associated with nuclear waste disposal. This, coupled with the enormous costs associated with the building and decommissioning of nuclear power plants,<sup>51</sup> would probably rule out the nuclear option in this country.

In relation to fuel substitution, the greatest hope for Australia is solar and wind energy. There are abundant quantities of both these energy resources. As noted above, the wind energy potential is very high in the southern part of the Australian continent, near to populated areas.<sup>52</sup> As for solar energy, most of the country receives over 1,600 kWh *per square metre per year* of solar radiation, while in an area near the Western Australia-Northern Territory over 2,500 kWh *per square metre per year* of solar radiation is received.<sup>53</sup> This is only 10 percent less than the amount of solar radiation received in the Sahara Desert, where the greatest incidence of solar insolation occurs.<sup>54</sup> A further advantage of solar energy is its versatility; not only can it be used for heating and cooling of space and water, it can be directly converted to electricity by photovoltaic cells and used to create hydrogen fuel.<sup>55</sup>

At present, there are no legal management regimes in place in respect of solar and wind energy, and there are many legal barriers impeding the introduction of these energy resources. In the case of solar energy, the barriers consist of restrictive covenants which have the effect of prohibiting the installation of solar devices onto buildings,<sup>56</sup> building regulations and by-laws, and miscellaneous state statutes relating to the preservation of historic buildings, public health, electricity supply and local government controls.<sup>57</sup> In addition to new laws removing existing legal barriers, if the use of solar energy is to advance in this country we

<sup>50</sup> For a discussion of licensing schemes elsewhere see Kunth, B., 'International Aspects of Nuclear Installations Licensing' (1987) 5 *Journal of Energy and Natural Resources Law* 202; Purdue, M., 'The Licensing of Nuclear Power Plants in the United States' (1988) 5 *Environment and Planning Law Journal* 4; Fitzgibbons, R., 'Nuclear Licensing and Regulatory Reform: The Developing Consensus for Federal Legislation' (1985) 32 *Fed. B. News & J.* 333.

<sup>51</sup> For decommissioning issues see Beck-Dudley, C.L. and Malko, J.R., 'Decommissioning Nuclear Power Plants: A Survey of state Public Service Commissions' (1990) 10 *Journal of Energy Law and Policy* 141.

<sup>52</sup> *Supra* n. 24.

<sup>53</sup> National Energy Advisory Committee, *op. cit.* 7; Bradbrook, A.J., *Solar Energy and the Law* (1984) 4-5.

<sup>54</sup> Australian Academy of Science, *Report of the Committee on Solar Energy Research in Australia*, Report No 17 (1973) 25.

<sup>55</sup> See, e.g., Deudney, D. and Flavin, C., *Renewable Energy* (1983) Chs. 3-5; McVeigh, J.C., *Sun Power* (2nd ed. 1983).

<sup>56</sup> See, e.g., Bradbrook, A.J., 'The Role of Restrictive Covenants in Furthering the Application of Solar Energy Technology' (1983) 8 *Adelaide Law Review*. 286; Comment, 'Solar Rights and Restrictive Covenants: A Microeconomic Analysis' (1978-79) 7 *Fordham Urban Law Journal* 283.

<sup>57</sup> See Bradbrook, A.J., *Solar Energy and the Law* (1984) ch. 8.

require laws guaranteeing a right of solar access to solar devices. This could be achieved either by modifications to property or urban planning laws, and could be adopted at either the local or state government level.<sup>58</sup> Consideration should also be given to modifying the law of nuisance, so as to exempt solar users from liability in certain circumstances,<sup>59</sup> and to new consumer protection laws establishing product standards and protecting users from installation problems and false advertising claims by manufacturers.<sup>60</sup>

In the case of wind energy, there are three legal impediments. First, existing building regulations and local government by-laws may impede or effectively make it impossible for a wind generator to be erected legally.<sup>61</sup> Second, there is the problem of the tortious liability of the owner of a wind generator. This liability may arise in a variety of circumstances where the wind generator malfunctions and causes personal injury or damage to neighbouring property, or where the normal use of the generator amounts to an actionable nuisance.<sup>62</sup> And third, there is the issue of a legal right of access to the wind: even if a wind generator is ideally situated at a windy location, it may be rendered ineffective or inefficient if a building development, the growth of trees, or the erection of another wind generator upwind restricts the natural flow of wind to the wind generator.<sup>63</sup> The legal solution to all these problems is well-known, but has yet to be implemented.

Contrary to popular impression, Australia has substantial reserves of geothermal energy, in the form of hot groundwater, in southern Victoria, the southern half of South Australia, central Queensland, the eastern highlands of New South Wales, and the Great Artesian Basin.<sup>64</sup> The economic viability of the exploitation of this resource in many centres is well documented.<sup>65</sup> At present, the resource is largely unregulated. The exploitation of geothermal resources will necessitate a consideration of the need for legislative controls designed to ensure sound management and to establish allocative regimes.<sup>66</sup> Numerous issues will need to be addressed: for example, the ownership of the resource,<sup>67</sup> the granting and assign-

<sup>58</sup> See Bradbrook, A.J., *Legal Aspects of the Practical Application of Solar Energy Technology in Australia* (1985) Report NERDDP/EG/85/452; Kraemer, S.F., *Solar Law* (1978) ch. 6.

<sup>59</sup> See, Bradbrook, A.J., 'The Tortious Liability of the User of a Solar Energy System' (1983) 14 M.U.L.R. 151.

<sup>60</sup> Bradbrook, *op. cit.* n.57 ch. 10; Lawrence, W.H. and Minan, J.H., 'Product Standards and Solar Energy' in Minan, J.H. and Lawrence, W.H. (eds), *Legal Aspects of Solar Energy* (1981) 153.

<sup>61</sup> On this subject see Coit, L., *Wind Energy: Legal Issues and Institutional Barriers*. United States Department of Energy (1979) 9 ff.; Taubenfeld, R.F. and Taubenfeld, H.J., 'Wind Energy: Legal Issues and Legal Barriers' (1977) 31 *Southwestern Law Journal* 1053, 1056 ff.; Bass, L. and Weis, W., 'Safety Standards Development for Small Wind Energy Conversion Systems' (1981) 3 *Solar Law Reporter* 453, 469.

<sup>62</sup> See, e.g., Bradbrook, A.J., 'Liability in Nuisance for the Operation of Wind Generators' (1984) 1 *Environmental and Planning Law Journal* 128.

<sup>63</sup> See Bradbrook, A.J., 'The Access of Wind to Wind Generators' *op. cit.* n.6; Noun, R., 'WECS and the Land-Use Laws' (1982) 23 *Wind Power Digest* 33.

<sup>64</sup> Department of Industry, Technology and Resources and Victorian Solar Energy Council, *Geothermal Resources of Victoria: A Discussion Paper* (1985) 14 ff.

<sup>65</sup> Akbarzadeh, A. and Thompson, G., *An Overview of the Potential and Applications of Geothermal Energy in Victoria and Proposed Future Actions* unpublished (1984) 6-7.

<sup>66</sup> See, e.g., Allen, D.R., 'Legal and Policy Aspects of Geothermal Resource Development' (1972) 8 *Water Resources Bulletin* 250; Brooks, J.W., 'Legal Problems of the Geothermal Industry' (1966) 6 *Natural Resources Journal* 511; Sato, S. and Crocker, T.D., 'Property Rights to Geothermal Resources' (1977) 6 *Ecology Law Quarterly* 247 (part I) 481 (part II).

<sup>67</sup> See Bradbrook, A.J., 'The Ownership of Geothermal Resources' [1987] *Australian Mining and Petroleum Law Association Yearbook* 353.

ment of leases and permits, the rules concerning conservation of the resource, and royalty and unitisation agreements. In addition, there is a need for specific environmental controls over geothermal energy exploitation. Although the resource is on the whole environmentally benign, several possible adverse effects, such as blowouts, land subsidence, noise, and well-abandonment, need to be addressed from a legislative perspective.<sup>68</sup> What is required is new state legislation regulating the geothermal industry.<sup>69</sup> Such legislation already exists in many other common law jurisdictions.<sup>70</sup>

Finally, there is a need to encourage the rapid adoption of alternative road transport fuels, such as ethanol and methanol.<sup>71</sup> Even a cursory examination of existing legislation relating to the road transport industry reveals that there is a plethora of enactments which have the effect of inhibiting or preventing the substitution of hydrocarbon fuels by environmentally benign alternative fuels. A preliminary analysis of the legal barriers associated with the use of alternative transport fuels shows that over thirty separate Commonwealth and state laws contain provisions needing modification or abolition.<sup>72</sup> At the Commonwealth level these include the Customs Tariff Act 1901 (Cth), which would apply to alternative fuels if either fuel or vehicle parts were imported, and the Trade Practices Act 1974 (Cth) part IV, which effectively prevents the creation of joint ventures by oil companies to produce and market any product, including alternative fuels. Problematic state Acts include the Dangerous Substances Act 1979 (S.A.), which covers the handling, storage and distribution of all dangerous substances, the Noise Control Act 1976 (S.A.), which, for example, would impact on C.N.G. compressor stations, and the Shop Trading Hours Act 1977 (S.A.), which may apply to alternative fuel service stations.<sup>73</sup>

A comprehensive examination of all such legal impediments in this country is urgently required.

<sup>68</sup> See Bradbrook, A.J., 'Environmental Controls Over Geothermal Exploitation' (1987) 4 *Environmental and Planning Law Journal* 5; Tarlock, A.D. and Waller, R.L., 'An Environmental Overview of Geothermal Resources Development' (1977) 13 *Land and Water Law Review* 289.

<sup>69</sup> For a discussion of the form and contents of such legislation see Bradbrook, A.J., 'The Contents of New Geothermal Legislation' *op. cit.* n.6.

<sup>70</sup> New Zealand: Geothermal Energy Act 1953 (as amended by the Resource Management Act 1991); British Columbia: Geothermal Resources Act, Stats B.C. 1982 c. 14; Alaska: Ala. Stats Ann. s. 38.05.181; Arizona: Ariz. Rev. Stat. Ann. ss 27-651 to 27-675; California: Cal. Pub. Res. Code s. 3700 *et seq.* and ss 6902 *et seq.*; Hawaii: Ha. Rev. Stats ss 182-1 *et seq.*; Idaho: Id. Code ss 42-4001 *et seq.*; Montana: Mont. Rev. Codes Ann. ss 81-2601 to 2613; Nevada: Nev. Rev. Stats ss 534A. 010-040; New Mexico: N.M. Stat. Ann. ss 65-11-1 to 24; Oregon: Ore. Rev. Stats s. 522.010 *et seq.*; Washington: Wash. Rev. Code Ann. s. 79.76.010-990. In addition, there is U.S. Federal legislation regulating geothermal development on Federal lands: see 30 U.S.C. ss 1001-1025.

<sup>71</sup> For a discussion of alternative road transport fuels see National Research Council, *Fuels to Drive Our Future* (1990); Kohl, W.L. (ed.), *Methanol as an Alternative Fuel Choice: An Assessment* (1990).

<sup>72</sup> See Bradbrook, A.J., 'Energy Conservation in Transport — The Role of the Law', presented at E.R.D.C. Workshop, Canberra 1992.

<sup>73</sup> Other relevant Commonwealth and South Australian legislation on this topic includes: Distillation Act 1901 (Cth); Spirits Act 1906 (Cth); Commonwealth Motor Vehicle (Liability) Act 1959 (Cth); State Grants (Petroleum Products) Act 1965 (Cth); Pipeline Authority Act 1973 (Cth); Petroleum Retail Marketing Franchise Act 1980 (Cth); Petroleum Retail Marketing Sites Act 1980 (Cth); Liquefied Petroleum Gas (Grants) Act 1980 (Cth); Petroleum Products Pricing Act 1981 (Cth); and the Local Government Act 1934 (S.A.); Health Act 1935 (S.A.); Electricity Act 1943 (S.A.); Electricity Trust of South Australia Act 1946 (S.A.); Motor Vehicles Act 1959 (S.A.); Road Traffic Act 1961 (S.A.); Boilers and Pressure Vessels Act 1968 (S.A.); Motor Fuel Distribution Act 1973 (S.A.);

### 3.2.3 Tax Incentives must be Adequately Structured

As discussed earlier,<sup>74</sup> the use by governments in this country of tax incentives as a tool to hasten the development of environmentally benign energy sources has been *ad hoc* and spasmodic, and for this reason largely ineffective.

The challenge for both the Commonwealth and the State Governments is to achieve the maximum penetration of alternative fuels, renewable energy devices and energy conservation measures as quickly as possible. In this regard, the taxation laws are highly significant. Two illustrations can be given. Renewable energy devices and energy conservation measures, which may presently be financially prohibitive, could become cost competitive if the consumer is granted a tax rebate or deduction for the cost of the goods. Similarly, the retail price of renewable energy devices and energy conservation measures could be reduced sufficiently to become competitive if a tax advantage was offered to the manufacturer.

It is submitted that specific laws designed to promote alternative fuels, renewable energy and energy conservation are required. At present, both private individuals and industries investing in this form of technology are subject to the general laws of income taxation.<sup>75</sup> This is considered inappropriate given the national interest in reducing the use of fossil fuels and the special needs of investors and industry in this area. It is further submitted that different laws and financial incentives are needed for private individuals who invest in alternative fuels, renewable energy devices and energy conservation measures and industries which manufacture such equipment. In the case of private individuals, there should be a combination of income tax concessions, loans by government instrumentalities, and (in the case of the financially needy) government grants. The most appropriate measures here would be a special provision in the Income Tax Assessment Act 1936 (Cth) classifying the cost of approved measures or devices as a full rebate, entitling the taxpayer to a dollar tax relief for each dollar spent. Measures or devices would not qualify for the proposed rebate unless they were approved as meeting minimum performance or efficiency standards.<sup>76</sup> In addition, it is suggested that the state governments should establish a loan system, through their statutory electric or gas utility, for the purchase of approved measures or devices. Such loans would be repayable as an additional item on the regular electricity or gas bills. Special provision could be made for grants, rather than loans, to be made to persons on low incomes who purchase approved measures or devices. In the case of industries, those which invest in alternative fuels, renewable energy devices, or energy conservation measures should be eligible for a special income tax incentive, in the form of an investment allowance. This

Business Franchise (Petroleum Products) Act 1979 (S.A.); Trade Standards Act 1979 (S.A.); Industrial Safety, Planning Act 1982 (S.A.); Second Hand Motor Vehicles Act 1983 (S.A.); and Occupational Health, Safety and Welfare Act 1986 (S.A.).

<sup>74</sup> *Supra* n. 26.

<sup>75</sup> For a discussion of the applicable general laws of taxation in Australia see Bradbrook, A.J., 'The Use of Income Taxation Incentives to Promote Renewable Energy and Energy Conservation' *op. cit.* n.28, 5-22.

<sup>76</sup> The need for minimum performance or efficiency standards is based on the U.S. experience: see Michigan Department of Commerce, *Michigan Tax Incentives for Residential Renewable Energy Systems* (December 1986).

allowance could take the form of a 50 percent deduction off the costs of purchase and installation of such devices and measures in the year of income in which the costs were incurred, with a further 50 percent deduction available in respect of the next succeeding year of income. In addition, government subsidies to manufacturers for the cost of the purchase and installation of approved devices and measures should be considered by state governments, either generally or on a selective basis.

### 3.2.4 *The Private Generation of Electricity should be Encouraged*

In many overseas countries, particularly the United States, a substantial proportion of new electricity capacity comes from electricity generated by private companies or individuals, who contract with the relevant electricity utility to sell electricity to it on a continuing basis. This relieves the utility from the need to construct new power stations. The bulk of this electricity is generated by cogeneration plants and wind energy, with a lesser amount from solar energy and hydro-electricity. It is predicted overseas that the private generation of electricity will increase rapidly in future years.<sup>77</sup>

From an environmental perspective, the development of private electricity generation to the maximum extent practicable is highly desirable, for three reasons: (i) it minimizes the waste of energy from independent power producers; (ii) to the extent to which it defers the need for new power stations, it eliminates the adverse environmental effects caused by the burning, transportation and mining of fossil fuels, especially coal; and (iii) it promotes the development of clean energy sources.

The rapid development of private electricity generation has not occurred in Australia, where comparatively few private generators supply electricity to the electric utilities. As explained earlier,<sup>78</sup> the main reason for this is that the rates offered to private generators by the utilities have been unrealistically low. At present private generators have no legal powers in this area, and the utilities can dictate the financial terms on which they are prepared to enter into contractual arrangements.

In Australia, the major avenue for reversing this situation and promoting the private generation of electricity is political. There is much that can be achieved by state governments by executive action without the need for law reform. A useful illustration is Victoria, where the State Government offered in 1987 a Cogeneration and Renewable Energy Incentives Package, designed to promote the private generation of electricity. The package offered various incentives to private and public sector organisations capable of producing up to 10 MW of electricity.

Despite the predominance of its political role, the law has a significant role to play in promoting the private generation of electricity. This can be seen from the Public Utility Regulatory Policies Act 1978 (P.U.R.P.A.) enacted by the U.S. Federal Government. This is a wide-ranging Act designed to promote energy conservation in a variety of different areas.<sup>79</sup> Only three sections relate to the

<sup>77</sup> See California Energy Commission, *California Energy Agenda: 1989-90 Biennial Report* (1990).

<sup>78</sup> *Supra* n. 33.

private generation of electricity, although their significance is vital. In outline, the sections require utilities to interconnect with private generators, provide legislative standards for determining the price paid for electricity bought from and sold to private generators, and exempt private generators from regulation under state law as utilities. The Act delegates to the Federal Energy Regulatory Commission the power to promulgate regulations implementing P.U.R.P.A. The key provision is s.210, which states that the rates offered to private generators for the purchase of electricity by electric utilities 'shall be just and reasonable to the electric consumers of the electricity utility and in the public interest, and shall not discriminate against qualifying cogenerators or qualifying small power producers.'

It is suggested that a comprehensive set of new statutory laws promoting the private generation of electricity is required. These proposals would be incorporated as a separate part into the existing state electricity legislation. The legislation should consist of the following: a duty on the relevant electric utility to encourage the private generation of electricity; the right of interconnection for qualifying cogenerators with the state electricity grid; a statutory right to sell privately generated electricity to the electric utility; the method for fixing rates for the purchase of electricity by the electric utility; a statutory right for private generators to purchase electricity from the electric utility at fair rates; the publication and explanation of the rates for the purchase and sale of electricity by electric utilities; and a right of legal redress for private generators against an unfavourable exercise by the electric utility of its powers.<sup>80</sup>

### 3.2.5 *The State Statutes Regulating Electricity Utilities Should Be Revised*

The majority of the state statutes establishing and regulating the statutory electricity authorities<sup>81</sup> were enacted many years ago prior to the modern concerns regarding the environmental pollution caused by large-scale fossil fuel-fired generating stations, and before the current emphasis on conserving fossil fuels, particularly oil and gas, and increasing energy efficiency. At that time the concern was to increase generating capacity as far as practicable rather than to rein in growth, as it was thought that the growth of a country's gross national product was inexorably linked to the growth in its electricity generating capacity. Also, at that time competition developed between the electricity and gas industries, both of which effectively encouraged consumers to consume more.

Ever since the 1970s, however, there has been a complete change in policies regarding electricity generation. The oil crises of this era dramatically illustrated the need for energy conservation. Many environmental dangers caused by pollution from fossil fuel burning have come to light, and the theory linking the growth in gross national product and electricity generating capacity has been exploded.

<sup>79</sup> For a discussion of this legislation see Ferrey, S., *The Law of Independent Power* (1991) (looseleaf service); Hagler, T., 'Utility Purchases of Decentralized Power: The P.U.R.P.A. Scheme' (1983) 5 *Stanford Environmental Law Annual* 154; Siler, D.A., 'Cogeneration and Small Power Production' in Buck, L.E. and Goodwin, L.M. (eds), *Alternative Energy — The Federal Role* (1982) ch.7.

<sup>80</sup> For a more detailed discussion of these proposals see Bradbrook, A.J., 'Legal Aspects of Promoting Energy Cogeneration' (1989) 6 *Environmental and Planning Law Journal* 332, 342-6.

<sup>81</sup> *Supra* n. 12.

The legislation regulating electricity utilities does not reflect modern realities in the energy field, and has not been amended to reflect changes in government policy and public perception. Thus, for example, in most jurisdictions the legislation does not impose a duty on the electric utilities to promote measures such as independent power production or energy efficiency.<sup>82</sup> Indeed, in some States there is no list of duties whatsoever in respect of the generation of electricity.<sup>83</sup> In these States, it appears to be left to the general discretion of the electric utility to determine the appropriate energy policy, with no power of accountability attached. It is perhaps for this reason that the environmental movement has a history of dissatisfaction with the electric utilities, the most publicized incident of which being the Franklin Dam dispute.<sup>84</sup>

It is submitted that the state statutes regulating electricity utilities should be substantially modified to make the provisions environmentally acceptable. The following represent the minimum acceptable changes:

(1) A modification to the membership of the governing board of the utility so as to include members representing environmental interests.<sup>85</sup>

(2) A list of duties of the utility, including the duty to promote energy conservation and efficiency in all sectors of society, the duty to encourage independent power producers, and the duty to enter into power purchase contracts at fair and reasonable rates.

(3) A statutory system of electricity supply rates reflecting conservation goals and the cost and availability of fuel supplies.<sup>86</sup> All hidden subsidies in favour of various types of fuels should be eliminated.

(4) The creation of a system of formal review before any new generating plant is commissioned. The review should permit public participation.

(5) An appeal mechanism from decisions relating to rates made by electric authorities must be established, perhaps modelled along the lines of the public utility commission hearings in the United States and Canada.<sup>87</sup>

While reforms of this nature may be regarded by some as radical, it is submitted that they are long overdue. It is unacceptable to allow electricity utilities to operate without any formal controls available to the general community. The utilities can

<sup>82</sup> Exceptions exist in Victoria and Western Australia: *supra* n. 30.

<sup>83</sup> This is the situation under the Electricity Trust of South Australia Act 1946 (S.A.); Hydro-Electric Commission Act 1944 (Tas.); Electricity Commission Act 1985 (N.T.); Electricity Commission Act 1950 (N.S.W.). Limited duties are specified in the State Electricity Commission Act 1958 (Vic.) s. 12A; Electricity Act 1976 (Qld) s. 36C; State Energy Commission Act 1979 (W.A.) s.27(7). The dearth of specified duties should be contrasted with the extensive lists of statutory powers given by each state Act to the relevant electricity utility.

<sup>84</sup> Culminating in the High Court challenge in *Commonwealth v. Tasmania* (1983) 158 C.L.R. 1.

<sup>85</sup> Under current legislation, members are appointed in the discretion of the relevant Minister. It is suggested that the legislation should be amended so as to ensure that various interest groups (including environmentalists) are included within the membership of the governing board of each electric utility.

<sup>86</sup> Electricity supply rates or the method of calculating such rates are not prescribed, or even referred to in the existing legislation. At present in most states the cost of energy for non-domestic use reduces with increased use (the 'declining block' system). Under such a system, unnecessary energy usage is tacitly encouraged. It is suggested that the new proposed statutory system should change the tariffs so as to charge higher rates for increased consumption, and also to impose penalty rates against customers who consume more than a designated quantum of electricity.

<sup>87</sup> See, e.g., Barkovich, B.R., *Regulatory Interventionism in the Utility Industry: Fairness, Efficiency and the Pursuit of Energy Conservation* (1989); MacAvoy, P.W. (ed.), *The Crisis of the Regulatory Commissions: An Introduction to a Current Issue of Public Policy* (1970).



be controlled either by regulations (as in the United States and Canada), or by competition (as in the United Kingdom),<sup>88</sup> but there must be *some* control. The importance of energy supplies in modern industrialized society demands nothing less.

### 3.2.6 *The Environmental Provisions in the State On-Shore Petroleum and Pipeline Legislation should be Revised and Harmonized*

As discussed earlier, the state on-shore petroleum and pipeline legislation is deficient in many respects and varies significantly from state to state. The petroleum and pipeline legislation is also noteworthy for its cursory treatment of environmental issues.

The current environmental provisions are summarized succinctly by Forbes and Lang.<sup>89</sup> For example, in Western Australia, s.117 of the Petroleum Act 1967 forbids any interference with land surface, improvements, or soil conservation 'to a greater extent than is necessary for the reasonable exercise of the rights and performance of the duties' attaching to the title granted. Compensation is payable under s.18 for damages to neighbouring properties. Pursuant to the Petroleum Pipelines Act 1969 (W.A.), it is a continuing offence, punishable by a substantial fine, for pipeline licensees to allow any substance to escape from their registered lines. This is the total extent of the environmental provisions in that State's legislation. Similar cursory treatment is given in South Australia. Under sub-s.53(b) of the Petroleum Act 1940, a petroleum licensee must take all measures necessary or required by the Minister to prevent unnecessary injury to any land, and a regime for the abandonment and plugging of wells is prescribed by s.65. The Governor is empowered to make such regulations as is deemed necessary in respect of the avoidance of waste and wasteful operations (s.80a).<sup>90</sup> The pattern of limited, uncoordinated environmental provisions is repeated in the legislation in other states. A common feature is the granting of powers to the Governor-in-Council to make regulations affecting various environmental issues.<sup>91</sup> This has led to the proclamation of different provisions across the country.

It is considered that the current form of legislation is inadequate from an environmental perspective. Many issues are not addressed by the present laws. In addition, the existence of differing laws makes no sense as the same environmental concerns exist in equal force across the country. Further, differing requirements can force petroleum exploration and production companies to incur additional expenses in retooling and equipment purchase, which ultimately adds to the cost of the product, and may influence the investment decisions of the company. Additional legal expenses are also, of course, inevitable.

When considering reform in this area, the major issue to consider is the rela-

<sup>88</sup> Pursuant to the Electricity Act 1989 (U.K.). Discussed in Bailey, S.K. and Tudway, R.H., *Electricity: Law and Practice* (1992).

<sup>89</sup> Forbes, J.R. and Lang, A.G., *Australian Mining and Petroleum Laws* (2nd ed. 1987) ch. 18.

<sup>90</sup> Additional environmental measures are contained in the Petroleum Regulations 1989 (S.A.) *Gazette* 5 October 1989, 1053.

<sup>91</sup> See Petroleum Act 1940 (S.A.) s.80a; Petroleum Act 1984 (N.T.) s.118; Petroleum Act 1923 (Qld) s.65; Petroleum Act 1958 (Vic.) s.82; Petroleum Act 1955 (N.S.W.) s.86; Petroleum Act 1967 (W.A.) s.153.

tionship between the general environmental laws, which all Australian jurisdictions now possess, and the specific environmental provisions to be included within the petroleum legislation. An argument can be made that the petroleum legislation should contain all the legislative measures necessary to control all the various environmental problems associated with the development and exploitation of that resource. If the legislation is to be a comprehensive code governing the petroleum resource, possibly the answer should be in the affirmative, but this has not been found to be appropriate or necessary for the development and control of other types of natural resources. In this country, for example, the mining and groundwater resources are all subject to the general environmental legislation in addition to other controls contained in legislation applying specifically to each resource. It is submitted that the treatment of petroleum resources should be consistent with this legislative pattern: in other words, the environmental safeguards contained in the general environmental legislation should continue to be applicable to the petroleum industry, but supplementary environmental measures peculiar to the industry should be located as a separate part in the petroleum legislation.

Applying this general principle, no specific provisions relating to atmospheric and water pollution, and noise from petroleum operations would be required in the petroleum legislation as environmental legislation of general application controlling these issues is already in existence. The supplementary environmental measures to be included as a new part to the existing state petroleum legislation would include provisions relating to the prevention of blowouts, land subsidence, the abandonment of wells and production facilities, the avoidance of waste and wasteful operations, proper drilling methods (to avoid damaging petroleum reservoirs), the escape of substances from pipelines, the corrosion of pipelines, and the disposal of produced oil or gas.

#### 4. *CONCLUSION*

It is clear from the above discussion that the present state of energy law in this country is far from satisfactory from an environmental perspective. There is considerable scope for modifying existing energy laws and introducing new energy legislation consistent with environmental objectives. In this regard, there is much work for legal academics (in researching and teaching environmental aspects of energy law), law reformers (in devising appropriate new legislation), and practising lawyers.

It is submitted that in future energy law should be viewed as a major focus for environmental lawyers, rather than just a marginal concern. Issues discussed in this paper relating to energy law and the environment may well constitute a political battleground over the next decade between the development and environment lobbies. There are many powerful, vested interests in the mining industry and the electricity authorities who are likely to view the "greening" of energy law as a major threat to their positions. This will lead to a great reluctance to entertain change. The possibility of change is further complicated by economic factors, such as Australia's balance of payments problem and its heavy reliance

on the export of minerals, which gives credence to the position of the anti-reform lobby.

However, despite these difficulties ahead in the path to reform, the greening of Australia's energy laws is too important to avoid. For many years other professional bodies have striven to ensure that energy use and policies are consistent with environmental objectives. Thus, for example, engineers have devised new types of renewable energy and energy conservation measures, architects have devised buildings with decreased heating and cooling requirements, and town planners have mapped future towns and subdivisions with a view to reducing transportation requirements. The legal profession, and environmental lawyers in particular, should not be seen to be lagging behind.