A SUBMISSION TO THE INQUIRY BY THE PRODUCTIVITY COMMISSION INTO THE ECONOMIC AND ENVIRONMENTAL POTENTIAL OFFERED BY ENERGY EFFICIENCY

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Laurie Virr has formal qualifications in both architecture and engineering. He designed and supervised the construction of his first passive solar house In 1963, whilst employed In the U.S.A. His entire career in architecture has been devoted to the rediscovery of the principles of energy efficient building, and examples *0f* his work formed part of the Australian exhibits at The Commonwealth Institute, London, U.K. in 1972, and the Paris Blennale in 1982. He has been a guest lecturer at universities in Australia and the United States of America. These latter include the Frank Lloyd Wright School of Architecture, Spring Green, Wisconsin, the College *0f* Architecture, University of Oklahoma, Norman, Oklahoma,. the University of Washington, Spokane, the University of Minnesota, Minneapolis, and the University of Idaho, Moscow, Recently he was nominated for the Bruce Goff Chair of Creative Architecture at the University of Oklahoma, Norman, Oklahoma.

The house at Kambah, A.C.T., in which he lives, and which was, constructed substantially with his own hands, has been published on three continents, and visited by more than 1700 people from around the world. It has achieved a minimum temperature at night, in winter, without artificial heating of 12° Celsius. This, when the minimum temperature outdoors was -9° Celsius. The most recently completed of his passive solar works was monitored continuously for a period of 3 months from the occasion of Its first occupancy. - During the whole of that time the temperarature within the house varied less than I° Celsius, yet there was no artificial heating.

Paul Hanley commenced studies for the N.S.W. TAFE Architectural Draftsman's Certificate course in 1971, and qualified in 1975. He has been designing passive solar buildings exclusively since 1978. Employed successively by a drafting service, a large building company, and both large and small architecture practices thru 1988, he has since had a continuous stream of commissions to design passive solar buildings on his own behalf, both residential and commercial. A member of the Australian and New Zealand Solar Energy Society since Its Inception In the A.CT, he has delivered lectures on passive solar and earth sheltered [underground] design on numerous occasions since 1995 at special building seminars held at the School of Environmental Design, University of Canberra. , In 2004 he was Invited to address graduate students of the School of Resources, Environment and Society, Faculty of Science, at the Australian National University.

He has lived in an earth sheltered house of his own design and construction, In the Canberra suburb of Wanniassa, for the past 20 years. It is characterized by having a stable diurnal temperature, and excellent energy efficiency. Despite disapproving of the A.C.T. House Energy Rating Scheme, his designs have achieved the two highest scores recorded under the system, and he was the recipient of the 1999 Housing Industry Association, A.C.T./Southern N.S.W., Award for the Energy Efficient Home of the Year.

The writers welcome the opportunity to contribute to the inquiry into The Economic And Environmental Potential Offered By Energy Efficiency, initiated by the then Parliamentary Secretary to the Treasurer, the Hon. Ross Cameron, MP, on 31 August 2004.

SCOPE

This submission is primarily a response to Item 2 of the Terms of Reference which relates to the effectiveness of existing local, federal and state government programs, including consideration of the level of coordination between these programs, and comparison with International experience, altho some of the recommendations herein have relevance to other aspects of the inquiry. It is restricted solely to matters associated with the building and construction Industries, with particular reference to the A.C.T., these being our fields of employment, and hence, our experience

Matters canvassed include:

- Events immediately preceding the introduction of the National House Energy Ratings Scheme in the Australian Capital Territory.
- The subsequent introduction of the A.C.T. House Energy Rating Scheme. and its relationship to Victorian legislation.
- The role of the A.C.T. Department of Environment and Land Planning [now the A.C.T. Planning and Land Authority Branch of the Department of Urban Services] and its consultants and technical advisor, in the introduction and implementation of this, and successive schemes,
- The serious technical deficiencies in, and requirements of, the A.C.T. House Energy Rating Scheme, and subsequent schemes.
- Energy efficiency programs in operation within, the building and construction industries in the United States of America.
- The urgent need, thru'out all the Australian States and Territories, for the introduction *of* uniform solar rights legislation, prior to the implementation of any energy rating systems.
- The A. C. T. Sale of Premises Act: deficiencies in the concept, and its implementation
- The crucial role of subdivision in the provision of suitable sites for passive solar houses.

A BRIEF HISTORY

It Is the arrogance of the age in which we live that assumes passive solar houses are a 20th Century phenomena: there is evidence that some 5000 years ago, in China, an entire settlement was sited and constructed in accordance with the principles Involved, The Native American Indian settlements of Mesa Verde, estimated to have been established c1200 C. E. were based on similar considerations. Some large houses in Medieval Europe, had a room called the solar, situated on the south side, which served as a private retreat for the owner.

Following the establishment of European settlement of Australia in 1788, building construction reflected British practice, Buildings were often orientated towards the south, or were encompassed by verandahs that effectively shaded the windows from any sunlight. Later the typical Queensland house more closely expressed the nature of the climate of that State, being raised well above natural grade, furnishing abundant shade, and employing solar energy thru the exploitation of whatever breezes were prevalent.

In May 1948, the Commonwealth Experimental Building Station, Department of Works, Sydney, New South Wales, published a thin volume with the title, *Sunshine and Shade in Australasia.* The author was R.O. Phillips, who, at a time when there was a paucity of practical material relating to the subject, produced the tables and charts, the solar protractor, and an analysis of the procedure to be adopted to ascertain the degree of sunlight penetration or shading that would result from the employment of various building elements. This was pioneering work, as was the research conducted by the C.S.I.R.O. during the 1950's into solar hot water heaters.

Work of a like nature continues to be undertaken in this country, with current research at the University of New South Wales and the University of Sydney in relation to flat plate solar collectors and photo-voltaic cells in the forefront of similar endeavors around the world.

THE RESPONSE TO THE GREENHOUSE PROTOCOLS

The Protocols were signed by the national government on behalf of all Australians, and whilst it is absolutely necessary to take cognizance of the different climate zones in which individual states are located, it should yet be possible to devise a truly national strategy,

Learning about energy efficiency should be as necessary in our society, as is the capability to swim, ride a bicycle, drive an automobile, or operate an automatic teller machine. Energy efficiency is Improving in Australia due to the fact that manufacturers of consumer goods have found it to be in their interest to place emphasis on this aspect of their businesses. It is not " occurring to anything like the same extent in housing, nor is it reasonable to expect it so to do. The occupiers of every dwelling have distinct behavior patterns that affect their energy consumption; different reactions to heat and cold, idiosyncratic approaches to cooking, bathing, laundry, and other activities.

The concept of energy efficient housing has the potential to bequeath significant benefits to Australia, enriching the lives of citizens, particularly the poor, protecting the environment, and making our cities an architectural expression of our love and care for our planet,

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Since 1987, and perhaps from an even earlier date, the emphasis in this country has moved from passive solar to low energy. Governments, whose very existence is dependent upon being In touch with the sentiments of the community, have shown little desire to formulate, adopt and publicly articulate policies that are in unambiguous opposition to the major concerns of the electorate. Australia, as distinct from Europe, North America and Japan, has developed different cultural values: there Is not the social discipline displayed here that can be experienced in, for example, Germany and Japan. This country's citizens do not respond well to coercion.

Moreover, those who live in areas with sub-tropical climates have completely different perceptions of heat and cold from those whose domicile is in the more temperate zones of the country. Sydneysiders, believing they live-in a benign climate, do not heat their houses. Canberrans visiting the harbor city in winter find it damp, and the houses very cold. Brisbane promotes itself as the capital city of the Sunshine State, whereas Canberra actually has more useful sunshine thru the year. Perception of living conditions and climate are very important, and most Australians do not perceive as significant concerns with regard to the heating and cooling of houses by artificial means. Australia's measures in relation to the Greenhouse Protocols have been criticized as being largely cosmetic, and in the field of energy efficient I, housing, and automobiles, this is justified.

Powerful lobby groups have also influenced the situation. Energy efficient building relies on good practice: the major institutions whose members are building contractors are on record as telling the Building Code of Australia

Board that they are not interested In good practice, and that their cooperation be limited only to alleviating the very worst practice. Furthermore they would not condone any measures that may disturb the builders who employ traditional construction methods or the manufacturers of materials that are energy intensive in their production.

The major concern however has been the evangelizing zeal of those in favor of house energy rating schemes based on computer modeling. Having demonstrated by their actions that they consider themselves to possess all the answers, they have felt obliged to force others to conform to their views. The gift of persuasion of the public has not been bestowed upon these types. Their approach has been thru the legislatures, obliging citizens to comply with the laws they have been Instrumental in devising.

It is not desirable In a country such as Australia for all those who wish to build a new house to be obliged to spend a portion of their budget on Insulation. Some, perhaps in time, many, will choose so to do, but what of those others who would prefer to purchase other Items Instead? Is It the role of government to dictate to citizens with regard to such personal matters?

Energy efficiency In housing Is closely related to weather patterns. The Bureau of Meteorology, with a complete network of weather stations and superfast computers to process the data, is unable to furnish absolutely reliable information, Computer modeling for energy efficient houses, relying on such information, is equally unpredictable.

The whole history of the various House Energy Rating Schemes in Australia Is one of having to be frequently amended as the assumptions upon which they have been based have proved to be incorrect.

HOUSE ENERGY RATING SCHEMES

In the flurry of bureaucratic activity that followed Australia's signing-of the Greenhouse Protocols, the A.C.T. was selected to be the testing ground for the Introduction of a National House Energy Ratings Scheme. Compliance was mandatory. Later, the Territory, and Queanbeyan, New South Wales, adopted the A.C.T. House Energy Rating Scheme, which was based on Victorian legislation enacted in the Interim. Whereas Victoria and Queanbeyan made compliance with the legislation voluntary, and hence had little impact, that for the A.C.T. remained mandatory.

The House Energy Rating Scheme is a concept that may have originated from the very best of Intentions, in an effort to conserve the nation's non-renewable fossil fuels and to meet Australia's international treaty obligations. It came into effect in the A.C.T. on 1 July 1995. The assessment criteria ' however, were hurriedly determined, predominantly subjective, and in some cases in serious error.

THE HOUSE ENERGY RATING SCHEME IS A CONCEPT THAT MAY HAVE ORIGINATED FROM THE VERY BEST OF INTENTIONS... THE ASSESSMENT CRITERIA HOWEVER, WERE HURRIEDLY DETERMINED, PREDOMINANTLY SUBJECTIVE, AND IN SOME CASES IN SERIOUS ERROR.

The A.C,T.H.E,R,S,, and Its successors, FIRST RATE and ACCURATE are purely utilitarian concepts, In pursuit of the goal of which, the potential interference with design, on a arbitrary basis, has been Ignored. It is a clumsy attempt to draft a rule so broad as to permit of no exception, and deserves to be consigned to the fate which has been held appropriate for similar essays In the past. All design is compromise. It Is essential that the final result be coordinated by the designer.

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The concept assumes an ideal set of conditions, whereas, In reality, there are so many variables. A.C.T.H.E.R.S. assumes a flat site, the long side of which Is facing north. It is too late for any of these schemes to have a major effect on the older and flatter suburbs. New subdivisions are generally representative of higher densities on more undulating land, and they encroach farther up the slopes than was previously considered desirable.

The assessment criteria heavily penalizes designs that have windows and french doors on any elevation excepting the north. If a leaseholder wishes to enjoy an

expansive prospect to the east, west or south of his lot, it should not be necessary for him to have to apply to government for special permission so to do. If desired, it Is possible to Incorporate eastern and western windows into a design, and shield them with shutters, pergolas, planting, and a variety of other devices.

IF A LEASEHOLDER WISHES TO ENJOY AN EXPANSIVE PROSPECT TO THE EAST, WEST OR SOUTH OF HIS LOT, IT SHOULD NOT BE NECESSARY FOR HIM TO HAVE TO APPLY TO GOVERNMENT FOR SPECIAL PERMISSION SO TO DO.

In the undue haste in which this, legislation was drafted, not only was scant regard paid to the technical details, but no consideration appears to have been devoted to the cultural implications of the undertaking. The argument that, like the Building Code of Australia, this is simply another 'clause' in good building control goes much deeper than has been generally acknowledged.

Moreover, it was not until April 1996 that the bureaucrats realized, as a result of enquiries by the writers, that the legislation they had enforced. for almost 10 months had not been prescribed! This example of gross incompetence by people charged with the administration of A.C.T. Government policy is one of many that has brought the House Energy Rating Scheme into justifiable, disrepute, A letter from the A.C.T, Ombudsman, suggesting that the legislation had not been prescribed, was-answered by the Department of the Environment and Land Planning, [now the Planning and Land Authority Branch of the Department of Urban Services] neither confirming or denying this, notion, but merely implying it was so. The criteria upon which the legislation was based was supposed to reflect a measure of public consultation, but to the writers' knowledge the only meeting that could be considered as being in that category was held on 6 June 1995, between the A.C.T, branch of the Australia and New Zealand Solar Energy Society and the then Coordinator of the House Energy Rating Scheme, D.E.L.P. Despite the fact that there was general agreement on that occasion with regard to the inappropriateness of some of the recommendations of the H.E.R.S., the Coordinator did nothing before its introduction more than 3 weeks later to have the relevant criteria amended. Furthermore, in the revised document published in December 1995, those criteria to which reasonable objection was made were still to be amended, and no explanation was offered by the D.E.L.P. as to why action was not taken in this regard.

MOREOVER, IT WAS NOT UNTIL APRIL 1996 THAT THE BUREAUCRATS REALIZED, AS A RESULT OF OUR ENQUIRIES, THAT THE LEGISLATION THEY HAD - ENFORCED FOR ALMOST 10 MONTHS HAD NOT BEEN PRESCRIBED!

Formulated on a 1960-70 concept of what constituted an energy-efficient house, an idea never accepted by those who have made their mark, in this field of endeavor, much of the basis of the program is purely subjective, and contingent

upon factors over which government, as yet, has no control, such as the quality of the drapes with which a citizen elects to furnish a house. Frequent references are made to the use of carpets on concrete floors, despite the fact that it was established beyond doubt more than 20 years ago that carpet is an insulator and therefore prevents the concrete slab acting as a heat sink. Paul Hanley annotated a copy of the tables of the assessment criteria, and found objections to most all of them.

MUCH OF THE BASIS OF THE PROGRAM IS PURELY SUBJECTIVE, AND CONTINGENT UPON FACTORS OVER WHICH GOVERNMENT, AS YET, HAS NO CONTROL, SUCH AS THE QUALITY OF THE DRAPES WITH WHICH A CITIZEN ELECTS TO FURNISH A HOUSE.

At its inception the A.C.T.H.ER.S. assessment was in two forms: one, a tabular version, the other based on a computer software program. The operation of the legislation had the effect of obliging architects and designers to adopt the incorporation of elements into their buildings that were demonstrably counter to the stated alms of the program, or face having the assessments of their designs downgraded. Figures 1 and 2 establish this point. Employing the H.E,R.S, recommended roof overhang to the North of 900mm, the drawing makes manifest that sunlight penetration at noon at the winter solstice will be 2100mm, and on 31 August, 850mm. Moreover, on 2 October, two weeks after the equinox, when temperatures may still be comparatively cool, sunlight is excluded from the building during the major portion of the day. By comparison, a minimum roof overhang to the North, favored by many designers of considerable experience, permits sunlight penetration at the winter solstice of 3550mm, and on 31 August, 1875mm. At noon on, 2 October, the sun will penetrate 1100mm into the building, but will be excluded on 22 December. Solar gain at the winter solstice, employing the recommended overhang, is 41% less than is achieved by adopting the minimum dimension, whilst In August, the coldest month, the figure is 52%, This for a scheme conceived as a means of encouraging the use of solar energy! There were many similar examples in the tables of the assessment criteria.

SOLAR GAIN AT THE WINTER SOLSTICE, EMPLOYING THE RECOMMENDED OVERHANG, IS 41 % LESS THAN IS ACHIEVED BY ADOPTING THE MINIMUM DIMENSION, WHILST IN AUGUST, THE COLDEST MONTH, THE FIGURE IS 52%. THIS FOR A SCHEME CONCEIVED AS A MEANS OF ENCOURAGING THE USE OF SOLAR ENERGY!

At the commencement of the A.C.T.H.E.R.S., and as an experiment, the writers asked clients to submit drawings for assessment of houses each had designed. The house that Laurie Virr designed was to a larger budget than that of Paul Hanley, allowing for more insulation and better materials and craftsmanship. Both

houses were approximately the same floor area, had similar orientation and areas of glazing. The expectation was that the former would achieve a higher score than the latter. It was not to be. When the drawings were returned Laurie Virr's house was rated at 45 points, whereas Paul Hanley's achieved 91 points.

All houses submitted for assessment were initially assured of a 1 star rating *by* virtue of the fact that It was assumed they would be furnished with heavy drapes and carpets! A tour around the new houses In the poorest areas of the Territory would soon cause even a casual observer to disavow such an subjective assumption. Folk have exhausted their resources in just purchasing the house they live in: it is some time before they can afford drapes of any description, and even then, they are unlikely to be heavy.

The climate of the A.C.T. is such that a solar hot water system can provide 75%

SUN ANGLES FOR Latitude 35° South

FIGURE 1 (not available here)

THIS IS HOW THE BUILDING INDUSTRY
WOULD INTERPRET WELL DESIGNED 900 WIDE EAVE
TO ACT HOUSE ENERGY RATING SCHEME
SCALE 1: 20

FIGURE 2 (not available here)

THIS SHOWS NO EAVE IN RESPECT TO PASSIVE SOLAR PERFORMANCE

NO EAVE STILL HAS THICKNESS OF FASCIA AND FASCIA GUTTER SHADING SCALE 1:20

DRAWN Paul HANLEY

of the annual hot water requirements for a household. However, when It was suggested to the technical advisor to the Territory Government that recognition should be paid to the installation of this in evaluating the energy efficiency of a building, [a really significant energy saving, and an easily verifiable measure for which no sweeping assumptions would be necessary] the proposal was rejected on the grounds that, 'it was not desired to give away easy assessment points'.. This is an illustration of the manner in which some bureaucrats and consultants have battened onto the various House Energy Rating Schemes in order to push the barrow of a private agenda.

HOWEVER, WHEN IT WAS SUGGESTED TO THE TECHNICAL ADVISOR TO THE TERRITORY GOVERNMENT THAT RECOGNITION SHOULD BE PAID TO TILE INSTALLATION OF THIS IN EVALUATING THE ENERGY EFFICIENCY OF A BUILDING, [A REALLY SIGNIFICANT ENERGY SAVING, AND AN EASILY VERIFIABLE MEASURE FOR WHICH NO SWEEPING ASSUMPTIONS WOULD BE NECESSARY] THE PROPOSAL WAS REJECTED ON THE GROUNDS THAT, 'IT WAS NOT DESIRED TO GIVE AWAY EASY ASSESSMENT POINTS'.

The A.C.T.H.E.R.S. and its successors takes no cognizance of specific location, topography, existing or future vegetation, micro-climate, prospect, undesirable views, personal preferences, the reflectivity of roofing materials, and a whole host of other practical and aesthetic considerations that a sensitive designer has to take Into account after accepting a commission from a client to design a passive solar house. Moreover, the experience of such persons would indicate that It is possible to build two houses, identical in every respect, on apparently similar sites, and achieve completely different operating results.

The assessment process is based entirely upon an examination of the drawings and specifications, and hence is decidedly theoretical. The need for a building certifier to be able to Inspect the timber frame of a brick veneer house results in the requirement that the wail insulation be on site, but not, Installed. One hears of instances where the same insulation is moved from job to job, for by the time of the following inspection, the walls are lined, and, there can be no determination, short of demolition, as to whether insulation has been installed, for there is no requirement in the legislation for the composition of the completed construction to be determined by the use of infra-red cameras, as Is required in some jurisdictions In the United States of America.

The writers know of Instances where recently constructed houses have received a Final Certificate and Occupancy Approval despite having no ceiling insulation. This lack was drawn to the attention of one householder when an electrician found it necessary to enter the ceiling space whilst

engaged in adding additional fixtures.

Another case relates to folk who had resided for 5 years in a house to which they decided to make alterations and additions. Their belief was that the walls were insulated, but when the linings of the gable end were removed It was seen that the only Insulation was small patches in the areas where switch and socket plates were located. Examination of the entire residence showed that this was the situation thru'out. When the electrician cut holes in the linings, as indicated on the electrical layout, the impression was given that the walls were fully Insulated.

Such is the belief of the advocates of this flawed scheme in the bureaucratic process that Its Introduction was heralded with behavior more becoming a totalitarian state than a democracy. A number of practitioners who, for 20-30 years, educated themselves, conducted practical experiments in the construction of energy-efficient houses, and whose services are now sought by clients as a result of their acquired knowledge and experience, and the success of their designs, were Informed by D.E.L.P. advisers of far lower attainments, that all their empirical knowledge was for naught, and if they did not subscribe to the theoretical tenets of the assessment criteria, attend the instruction course, and purchase the computer software, they would not be able to practice their profession entirely on their own behalf in the A.C.T. This Is a very serious matter, as there are more passive solar houses, and more opportunities to design them In this region, than elsewhere In Australia. To those who have devoted their working lives to the cause, have pride in their achievements, and a measure of dignity, this smacked as being unjust. Paradoxically, they were also told, by the same advisers, that they would not be welcome to attend the computer program instruction courses, because they were liable to ask too many awkward questions, remarks repeated to Paul Hanley in early October 1999.

Under the legislation, in compiling an assessment for a house, consideration has to be given to the lack of solar access as the result of overshadowing from existing buildings, and yet there has been no solar rights legislation enacted for the A.C,T. There is no requirement that an applicant for building approval be required to submit a drawing of the solar envelope of the., proposed construction, or for neighbors to make theirs available for perusal, so that, as far as possible, everybody's rights can be respected in the, preparation of a design. One may choose to build a state of the art, energy-efficient house, which is the epitome of architectural good manners inasmuch as it furnishes privacy, takes cognizance of that of its neighbors, functions well, Is in scale with, and reflects the topography and size of the lot, is constructed from materials that are unobtrusive, and whose colors blend with those of the natural landscape, and that has a roof line that quiets the whole and gratifies the sense of shelter. It is possible to do all these things, and yet if one's neighbors choose to closely plant a species of tall tree on their side of your northern lot line, thereby significantly annulling the energy-efficiency aspect of your endeavors, then there is no redress. Colorado has solar rights legislation, as does Davis City, California, and many other municipalities in the U.S.A.

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TALL TREE ON THEIR SIDE OF YOUR NORTHERN LOT LINE, THEREBY SIGNIFICANTLY ANNULLING THE ENERGY-EFFICIENCY ASPECT OF YOUR ENDEAVORS, THEN THERE IS NO REDRESS.

The need for solar rights legislation in all States and Territories is overwhelming, as is the acceptance of neighborhood landscape plans. It should be possible in Australia, as it has been shown to be in the United States of America, for residents of an enclave to agree on the variety and location of tall trees and shrubs so as to advantage all.

THE NEED FOR SOLAR RIGHTS LEGISLATION IN ALL STATES AND TERRITORIES IS OVERWHELMING.

Ku-ring-gal Municipal Council, in New South Wales, administered a form of solar rights legislation thru the Local Development Control Plan [DCP 38]. If an application was made to demolish a house In order to erect another on the lot, and the proposed building met the criteria of the Building Code of Australia and general planning regulations, permission was granted subject to the siting being such as would permit the sharing of solar access by it, and the adjacent properties.

This House Energy Rating Scheme legislation is foolishness, an amateur's effort. It is regressive, and, as a consequence, oppressive. In their haste to have It operative, and in furnishing the requisite information to others who drafted it, the zealots have laid bare their lack of substantial practical experience. Aspects of the design and siting process which should be simple, they have made complex: the far greater number that are complex, have been treated as if they are simple. There are none who can Inflict more damage on any endeavor than the enthusiasts bereft of talent.

ASPECTS OF THE DESIGN AND SITING PROCESS WHICH SHOULD BE SIMPLE, THEY HAVE MADE COMPLEX: THE FAR GREATER NUMBER THAT ARE COMPLEX, HAVE BEEN TREATED AS IF THEY ARE SIMPLE.

The process of gaining acceptance of passive solar housing for those who have educated themselves has been very much one of drops of water wearing away the stone. It has involved them, as members of the International Solar Energy Society, arranging conducted tours of solar buildings, writing papers for both scientific and popular journals and magazines, lecturing at universities, and maintaining correspondence with folk involved in similar endeavors overseas, besides conducting their architecture practices. When they sought exemption from the provisions of the A.C.T.H.E.R.S. on the grounds that they had considerable experience in designing buildings to a far higher standard of energy efficiency than anything stipulated in the legislation, their application was dismissed as being Incapable of being granted on the basis of 'some kind of professional expertise'. That was insulting. Moreover, when they offered to take responsibility for their own work and displayed a willingness to have it subject to an energy audit at any time, this proposal was also rejected.

Thus, the schemes work on the lowest common denominator only, and require all who are practised and conversant in this area of building design and construction to do the assessment accreditation course. It makes no sense, and is not equitable, for such people to be placed in the same category, as those with no prerequisite knowledge of solar and energy efficient design.

At present, Paul Hanley's clients have to pay someone commercially to evaluate a design which he knows will more than surpass the 5 Star Rating.

Laurie Virr has refused to accept commissions from folk whose building sites are within the A.C.T. since the introduction of the A.C.T.H.E.R.S. It is ludicrous for both of them to have to entrust their drawings and details, In essence, to a competitor. Some of those details are the result of much hard work and years of experience, and they distinguish the work from that of others. Laurie Virr has been able to circumvent this requirement as much of his work is in rural New South Wales, in shires where Building/Health Inspectors accept that his experience, the quality of the design, the considerable detail contained, on the construction drawings, and his regular supervision of the works, far outweigh the merits of a piece of paper that purports to show the degree of energy efficiency.

The commissions that Laurie Virr and Paul Hanley receive are all as a consequence of recommendation. The former has recently received an inquiry from potential clients in Durham, North Carolina, U.S,A.

Those experienced designers who, for reasons of their own, have taken the course to allow them to be accredited assessors, primarily of their own work, describe it as a waste of both their time and money. The instruction consists almost entirely of matters associated with the operation of the computer software, and for this the course fee of $750.00 would appear exorbitant. With the additional costs of the software, $300.00, together with those for annual updates, suggested to be $200.00, the department would appear to be making the scheme a profit making enterprise, not merely recovering costs.

The tabular system of assessment was always given a lower status than the computer program, and soon abandoned, despite the fact that the Inputs to each were equally subjective. This reliance on the computer, however, is selective. Information on the database of houses submitted for assessment could form a valuable resource, enabling members of the general public and the design professions to study the most energy efficient buildings, and learn of, and from, their designers. It Is, however, held to be private, In confidence. This is a nonsense. If an owner advertises a house for sale by auction, all, the potential buyers are entitled to ask to view the energy efficiency assessment. There may be sixty or more people who, view the house, but only one purchaser. How can such a procedure be considered an exercise in maintaining privacy?

The 5 star rating can be attained with a score of just 5 points, a very low level of energy efficiency, yet a 4 star rating, -10 points, is all that is necessary to gain construction approval, The most efficiently designed passive solar houses In recent times have achieved scores greater than 35 points, but are still classified

as 6 star rated.

IN THE LIGHT OF THESE FIGURES THE TRUE ACHIEVEMENT OF THE A.C.T.H.E.R.S. CAN BE DETERMINED BY THE FACT THAT OF 800 HOUSES SUCCESSFULLY SUBMITTED FOR APPROVAL IN THE FIRST 4 YEARS OF ITS OPERATION, ONLY 40, OR 5%, WERE ASSESSED AS BEING IN THE 5 STAR CATEGORY. THE REMAINING 760 WERE APPRAISED AS BEING OF A 4 STAR STANDARD. RATHER THAN EMBRACING THE SCHEME WITH ENTHUSIASM AS A CONSEQUENCE OF A TRUE APPRECIATION OF THE ENVIRONMENTAL AND ECONOMIC BENEFITS THAT CAN ACCRUE FROM DWELLING IN REAL PASSIVE SOLAR HOUSES -WHICH MUST BE THE LOWEST CONSUMERS OF FOSSIL FUELS, AND GENERATORS OF GREENHOUSE GAS EMISSIONS - 95% OF SUCCESSFUL APPLICANTS OPTED FOR THE MINIMUM ENERGY EFFICIENT MEASURES NECESSARY TO MEET-THE COMPLIANCE STANDARD.

Some houses, considered Innovative, are Incapable of being assessed. Both the home of Laurie Virr, commenced in 1977, and that of Paul Hanley, commenced 1983, are such, and would not receive construction approval in the A.C.T. today. Moreover, some designs that have attempted to exploit a view - primarily to the Brindabella Range, to the west of Canberra – have not received approval, they being deemed to have too much glass facing that direction.

The Australian Capital Territory has had the House Energy Rating Scheme longer than most other States and as a consequence of this, and other factors, Is by far the most difficult jurisdiction In which to have building proposals approved. Those public servants - planners and technical officers - employed by the A.C.T. Planning and Land Authority should be facilitators, but are actually obstructionists.

Vested interest is one of the factors that has perpetuated these Ill-conceived schemes, It can be observed at all levels: from the Instigators who set themselves up as 'experts' or 'energy advisers' in private enterprise, the public servants who administer the legislation, and those in the Australian Greenhouse Office, who may well be surplus to requirements were it not enacted, to those who, with very little training, are able to earn more than the Chief Justice of the High Court of Australia, producing house energy - efficiency assessments that are little more than worthless, and for which they take no responsibility.

The Draft Report states that the operation of the various House Energy Rating Schemes adds to costs and inhibits innovative solutions to energy efficient housing and consumer choice. The writers concur with these views.

There is no point in constructing a solar house unless it is well done. The

necessary care that needs to be taken in the construction, and the unfamiliarity of some of the techniques involved, result in extra costs. Whether or not the additional expenditure will result In greater comfort, or be recouped in lower energy costs over a number of years must of necessity be an Individual value judgement. It is not for legislators to make that sort of decision for citizens: government should mind its own business.

The mass of the information issued by the Australian Greenhouse Office is available from many other sources, and is merely regurgitated by that organization. When reassembled, much of It is confused. In one publication it refers to a passive solar house, whilst drawing attention to the fact that the FIRST RATE assessment scheme Is designed to measure the capacity of a building to keep artificially produced heating or cooling within.

The frequently seen suggestion that a solar house should have the proportions of 1:1.5 width to length has little to recommend it, except to folk who see virtue in uniformity. Those who build their solar house according to the precepts of the Australian Greenhouse Office find they have, for example, a living room, a dining area, a kitchen and a family room facing north, and bedrooms and bathrooms facing south. In fact, half a solar house. A solar house can be any shape, but those that are one room wide, with utility spaces to the south, have proved to be the most successful. If the designer Is good enough It is possible to establish any relationship of spaces that is desired.

The widespread approach in Australia to energy efficient, new housing has been either to ignore it, or to attempt to adapt the conventional dwelling to meet the minimum requirements of the legislation. The population of this country has never displayed a great interest in architecture, or design. in general. The disappointing caliber of design of most so-called energy efficient dwellings can be no better characterized than in the Australian Consumers Association publication. *Warm House, Cool House*. It can be surmised many folk consider that if the examples depicted are typical of what is available, they may as well opt for the run of the mill builder's product. Very many Australians, even some of those who are better educated, are more Interested in the technology with which they furnish their houses than they are in the bricks and mortar that shelters It. They buy houses in order to keep the rain off the television.

There are advantages in living in a well designed, energy efficient house,, but it is not possible, or desirable, to attempt to-force people to conform to that way of life just by passing legislation. This is the mindset of those who initiated the A.C.T.H.E.R.S. The example of speed limits: on roads and highways should be indication enough that many folk will either ignore, or subvert, the provisions of the legislation.

The experiment of government housing at Bonnyrigg, New South Wales, is indicative of the problem. The architect for the initial scheme was an advocate of solar housing. His clients were disadvantaged members of the community. He enthused as to the types of houses he could design for these people. They were not impressed. They did not wish to be part of any experiment, but rather to have

a type of house similar In appearance to those of folk they considered to have been successful in life. Paradoxically, these are the very people who could benefit most from having low energy expenditures.

Living in a energy efficient house requires a level of commitment that is not apparent in many of the disadvantaged people in the community. Passive solar houses require active, *interested* occupants to 'drive' them: it is not entirely a matter of intelligence and education.

If Australia is to have a solar future, as it could well have, it will not come about as a consequence of attempts to force people to embrace certain modes of living. As with much social progress, it will result from the trickle down effect, and economic circumstances. When the cost of heating and cooling buildings by artificial means becomes prohibitive to an Increasing number of people they will consider alternatives.

The fact that the writers of this paper have maintained practices, for long periods of time, exclusively related to solar design, is an indication that there is some interest in the community in such an approach. Our clients would have to be classified as enthusiasts. Many of the population are not, as yet.

THE A.C.T. SALE OF PREMISES ACT

The House Energy Rating Scheme has no appreciable bearing on existing dwellings, those which will form the bulk of the nation's housing stock for many years to come. When alterations and additions are made to these dwellings, does the new construction have to conform to the H.E.R.S? If existing construction is not raised. to the same standard as the new work, the former will bleed heat from the latter In winter, and there will be a converse outcome in summer. How Is such a building to be assessed? As the need to curtail the size of settlements, and the increasing cost of scarce building resources, become manifest, as more folk choose to work at their abode, alterations and additions will form a predominant fraction of residential construction.

When an existing building is for sale in the A.C.T., It is a legal requirement of the transaction that the owner comply with the provisions of the Sale of Premises Act, by having the construction subject to an energy efficiency assessment. This legislation was passed in the A.C.T. Legislative Assembly, unaccompanied by any stipulation as to how this was to be achieved. In practice, existing buildings are subject to the same type of theoretical assessment as are , proposed buildings. It is deemed sufficient for an Accredited Assessor to merely examine the drawings: a site visit Is not considered necessary. Under this procedure it is not unknown for purchasers to realise that the assessment they have purchased is grossly inaccurate.

A known example is of a house built in Turner, A.C.T., In 1958. It is of cavity brick construction. Originally there was no insulation in the roof, but successive owners have installed both rockwool and expanded polystyrene sheets. The assessment, made solely from an inspection of the drawings, and, being Ignorant of the existence of the insulation, the assessor omitted its energy saving value from the

score, as a consequence of which the building was rated at 1.5, when in reality it must be between 3 and 4 stars, Moreover, on the assessment, a legal document, the house was described as being brick veneer. Why is it necessary for citizens to be subject to loss of time, and monetary expense for such a worthless result? As a consequence, the Sale of Premises Act is not highly esteemed by many residents of the Territory. It is widely regarded as yet another means for a government to raise revenue, and as such It alienates people with regard to considering energy efficiency.

It is almost impossible for a house built before 1990 to achieve an assessment of more than 1 star, in 1996 Laurie Virr designed some alterations and additions to a house at Monash, A.C.T. The brief called for anew main bedroom suite, a renovated bathroom, and measures to improve the energy efficiency of the building, which was of brick veneer construction, with a: timber floor.

The new bedroom took advantage of solar gain from sunrise until 1.00 pm in winter. All the new construction was heavily insulated, including the concrete floor slab.

The linings of the walls of the existing house were removed, the timber frame packed with insulation, and new linings Installed. The timber floor was Insulated between the joists, the batts being held in place with heavy duty sarking that was stapled to the underside of the structure, and the thickness of the existing insulation in the roof was doubled. The clients, friends of long standing, lived in the house for a further 5 years. They repeatedly told the architect they had never previously lived in such a warm, comfortable house. When family circumstances changed, and they found it necessary to sell the house, they were required to obtain an assessment under the Sale of Premises Act. Their house was rated as 1 star.

Absurd claims have been made for this legislation. About a year after the Act came into operation an article appeared in the journal of the Australian and New Zealand Solar Energy Society, *Solar Pro*gress. It claimed that as a consequence of vendors being obliged to have their houses assessed, those deemed to be more energy efficient were achieving enhanced value. The study involved referring to *The Canberra Times* on set dates and noting the *advertised* prices, not those received.

The following letter was sent to *Solar Progress* in response to the publication of this article.

The Editor
Solar Progress
by e-mail

I am surprised at a journal of the repute of Solar Progress would see fit to publish such unfounded claims as those attributed to Trevor Lee, with regard to the A.C.T. Energy Efficiency Rating [Sale of Premises] Act, and the rising values of the more energy efficient houses in the Territory.

In a desperate attempt to give any sort of credence to a thoro'ly discredited piece of legislation, Trevor Lee has resorted to statistics. Unfortunately, his knowledge of the subject apparently leaves much to be desired, altho It is more than possible that his efforts in this regard will reach a wider audience. University lecturers in statistics are always on the alert for fresh examples of flawed analysis for their first year students, and an example such as that published in Solar Progress may even be included in the Introductory texts.

The value of a house property is made up of many factors, some tangible, some intangible. An Energy Efficiency Rating conducted with the employ of blower doors and infrared cameras may be one.

Clearly the value of the Energy Efficiency Rating of a house is a tangible thing capable of measurement by a skilled person such as an architect or a statistician, a valuer trained in such measurements, an engineer, and perhaps others with the necessary acquired skills. But it cannot be assessed merely by looking at the drawings. It is the sum of the factors to be considered, and, for example, it cannot be assessed on a valuation based on comparable values, unless those values are said to be the results of the complete value of the few houses to be considered. Indeed, if any factor Is to be assessed other than by a 'seat of the pants' method it is the Energy Efficiency Rating. Amongst other things it must take into account history, weather patterns, orientation, materials, methods of heating and cooling used, insulation, and functions peculiar to the house, being trees, whether deciduous or not. Even then, it must compete with other factors: for example, aesthetic value, or the taste of the purchaser. In the end, there Is a residual factor that can be attributed to the Energy Efficiency Rating, but Trevor Lee has attempted to use statistical techniques to demonstrate a causal relationship between Energy Efficiency Ratings and house prices.

Two prominent statisticians made the following observations when asked to comment on the veracity of the claims made:

- Few would argue with the hypothesis that all things being equal, houses with higher Energy Efficiency Ratings would command higher prices.

- All things are not equal however, and his attempts to use statistical techniques to demonstrate a causal relationship between Energy Efficiency Ratings and house prices was extremely naive, and, at best, borders on the incredible. The art of the statistician is not naive, and certainly does not support what is an elementary logical failing.

- What he should have done was ask a group of recent house buyers what factors Influenced the price they were prepared to pay. It would be surprising if considerations such as location, size, potential, type of heating and cooling systems, architectural character, prevailing market conditions, and the buyer's budget did not emerge as important factors.

- The challenge for Trevor Lee and Energy Partners is to develop robust measures for these factors, and then use the appropriate statistical techniques,

such as multiple linear regression, to test the relationship between these factors and the dependent variable, the realised and advertised price.

- It would also be necessary for them to test for correlation between the , independent variables, and develop a strategy for minimizing the impact this might have on the statistical model.

- Altho the Beta coefficients have been presented, there are no indications of confidence levels and statistical significance.

- Any statistician or epidermatologist worth his, or her, salt, would know that a correlation does not imply causation. Few would be silly enough to suggest that the high correlation between one's timepiece and the position of the sun in the sky involves a causal relationship. The sun does not rise because one's watch says 6.00 am! Following this line, would Trevor Lee argue that hospices cause death because very few patients ever leave alive?

Even those without statistical knowledge are entitled to ask if the implementation of the Act is responsible for higher performing houses commanding premium prices at this time, is it also to be a significant factor when prices decline.

Real estate agents consulted with regard to the claims made deny that A.C.T. Energy Efficiency Ratings have had any significant bearing on the rising cost of houses in the Territory, attributing the increase In prices to a shortage of . dwellings during the past year-. They claim that location is still the primary concern, and that buyers will purchase a house in a desirable suburb regardless of Its Energy Efficiency Rating.

The classic definition of property value as enunciated by the High Court of Australia, Spencer v The Commonwealth of Australia [1907] 5CLR 418 that the value of a property is that which a willing but not over anxious purchaser would be reasonably expected to pay to an owner willing, but not anxious to sell, still prevails.

It was a simple matter to elicit the above responses, so why was the approach taken? The exact motive must remain a matter of conjecture, but It is reasonable to assume It comprised an element of self promotion and a determination to push an agenda regardless of the facts.

The A.C.T. Energy Efficiency Ratings [Sale of Premises] Act is a piece of legislative folly, poorly conceived, hastily drafted, the administration of which leaves much to be desired. The lack of substantial practical experience by Its leading advocates is apparent on every hand.

Most dwellings subject to the legislation are rated without the accredited assessor ever visiting the site. The owner, usually a lay person, is responsible for the provision of the technical information that is fed Into the computer program, thereby absolving the assessor of any responsibility for the result. The latter's report, handed to the owner, contains a disclaimer that states, 'The

A.C.T. House Energy Rating Scheme estimates the energy efficiency potential of the building fabric when the house Is heated and cooled In a certain fashion. Actual energy consumption will depend on the area of the house, the style of occupancy, and the pattern of usage and efficiency of appliances'. The fanatics supporting this legislation are achieving little or nothing, except the alienation of those they are attempting to persuade. It is solely regarded by the latter as yet another means for the government to raise revenue.

> **THE LATTER'S REPORT .... CONTAINS A DISCLAIMER THAT STATES, 'THE A.C.T. HOUSE ENERGY RATING SCHEME ESTIMATES THE ENERGY EFFICIENCY POTENTIAL OF THE BUILDING FABRIC WHEN THE HOUSE IS HEATED AND COOLED IN A CERTAIN FASHION ACTUAL ENERGY CONSUMPTION WILL DEPEND ON THE AREA OF THE HOUSE, THE STYLE OF OCCUPANCY, AND THE PATTERN, OF USAGE AND EFFICIENCY OF APPLIANCES'.**

As is the case with the A.C.T. House Energy Rating Scheme, so many of the practicalities have been ignored.

There are many other anomalies. For example, even when a purchaser intends, immediately upon taking possession, to demolish the building, he or she has bought, it is still incumbent upon a vendor to obtain an Energy Efficiency Rating.

If Australia is to meet its commitments, pathetic tho these are, with regard to the Greenhouse Initiatives, it is important that there be a Nationwide House Energy Rating Scheme, with mandatory insulation requirements for specific areas, incorporated into the Building Code of Australia. Assessment of the measures taken to fill gaps between materials, to ensure minimum air leakage, should form part of every building inspection. What Is required is a practical, not a theoretical scheme, and it must be such that those administering it, are required to take responsibility for their actions.

Rather than devoting time to the production of 'statistics' that are little more than propaganda, Inviting the derision of those more familiar with the subject, I suggest that Trevor Lee expedite the promised review of the A.C.T. Energy Efficiency Ratings [Sale of Premises] Act, accept that it has been an abject failure, and work to have it removed from the statute books.

Yours sincerely,

Laurie Virr
11 May
2000 The
Editor Solar
Progress by
e-mail

Trevor Lee replied:

The article which so upsets Mr virr comprised only four paragraphs. The fourth reads: `A rigorous review of the Act and its effectiveness is not expected to begin until after it has been in force for a full year'. You don't need to be Einstein to infer that the preceding three paragraphs were not being offered as a 'rigorous review'. What they were, however, was an interesting perspective which presented a prima facie case that the act was working. It corroborates but does not demonstrate the theory that informed buyers. will be willing to pay more for a high performance product - Just like the clients of Mr Virr's architectural services.

The article specifically avoids claiming any statistical refinement or a causal connection even though the raw data that is publicly available [the adverts themselves] Invites the observer to leap to that conclusion. To the contrary, the article cites potential causes for the correlation in the absence of any market demand for low energy design. It also makes no direct reference to the beta coefficients despite their being tantalisingly high [$12,000 per star initially, moving to over $20,000 per star after nine months].

It is the temporal change in the beta coefficient that I find interesting. This would be unaffected by whether market prices overall were rising or falling so I cannot understand Mr Virr's reference to that context. It makes no difference.

Mr Virr goes on to describe what he thinks a rigorous review would entail but in my opinion he would place undue reliance on what surveyed buyers and real estate agents would say influences them. It Is known that naive buyers of rated electrical appliances infer far wider imprimatur from a 5-star energy rating and it is entirely possible that a similar subconcious association, for example occurs with houses. Agents selling bone-chilling houses will naturally tell the prospects that the EER stars don't matter. And some naive buyers will believe them. So what? Aware buyers will be on the lookout for higher ratings. Astute buyers will be looking for a cheap low rating home in a good area which is inexpensive to upgrade. What conclusion might you draw from such a range of testimonies?

Trevor Lee

This reply Illustrates the whole approach that has been taken in relation to the various house energy rating schemes and the Sale of Premises Act, studiously avoiding answering the queries and criticisms raised. It is inconceivable to the champions of all this legislation that they could possibly be In error. In this instance two of Australia's outstanding statisticians are wrong, the experience of real estate agents counts for nothing, and naive buyers are easily misled.

The reason given for the introduction of the Sale of Premises Act was that of furnishing protection for buyers of houses. It is obviously not necessary for aware buyers, and astute buyers can be expected to look after themselves. This leaves the remaining group, the naive buyers, but they disqualify themselves by believing the claims of real estate agents!

Above it all sit the instigators, serene In the belief that they have all the answers,

for architects, statisticians, real estate agents, and naive purchasers of bone-chilling houses. There is no need for consultation or reliance on what real estate agents or buyers would say Influenced them. The same type of market research that has led to the view naive buyers of rated electrical appliances infer far wider imprimatur from a 5 star energy rating is, for some reason not appropriate in relation to the sale of houses.

Considerably less haste in its introduction would have ensured that the Sale of Premises Act would not have required rigorous review after only 12 months. If, as claimed in the reply, the `statistics' showed that the Act was working, why was a *rigorous* review necessary? This Is yet a further demonstration that those favoring regulation of this sort believe that any legislation Is better than none.

Quite apart from the unnecessary expense involved, is it really the role of government to hold everybody's hand In the transactions they make? Is there not an age old concept of `let the buyer beware'? It is impossible to legislate to protect some people from themselves.

THE COMMITMENT OF THE A.C.T. GOVERNMENT AND SHIRE COUNCILS

The performance of the A,C.T. Government In the field of housing does not offer encouragement. Government houses built since the introduction, of the A.C,T.H.E.R.S. are rarely sited so as to have good orientation. The ultimate irony is that the Planning and Land Management section of the Department of Urban Services, which administers the ratings scheme, chose to be located in Dame Pattie Menzies House, on Challis Street, Dickson, a building, the sun screens of which scoop the sun into the building during the summer, being open to the south west, and reject gain in winter from the north west. This is the exact reverse of what should occur. A further lack of commitment is witnessed at the Tuggeranong Aquatic Centre, built for government, where the opportunity to heat the water in the pools by means of solar collectors was not even considered, whilst a natural gas fired system was installed.

THE ULTIMATE IRONY IS THAT THE PLANNING AND LAND AUTHORITY BRANCH OF THE DEPARTMENT OF URBAN SERVICES, WHICH ADMINISTERS THE RATINGS SCHEME, CHOSE TO BE LOCATED IN DAME PATTIE MENZIES HOUSE, ON CHALLIS STREET, DICKSON, THE SUN SCREENS OF WHICH SCOOP THE SUN INTO THE BUILDING DURING THE SUMMER, BEING OPEN TO THE SOUTH WEST, AND REJECT GAIN IN WINTER FROM THE NORTH WEST. THIS IS THE EXACT REVERSE OF WHAT SHOULD OCCUR.

The accomplishment of the A.C,T, Government is often matched by that of Shire Councils. Many ski lodges in the High Country have double glazing, but It is fitted in aluminium frames that are constructed without a thermal break. Aluminium transfers heat at 17 times the rate of timber. Moreover, roof pitches

are required to be steep in order to shed the snow load, in direct contravention of the practice in other parts of the world. There they are at a gentle pitch, the more to protect people from minor roof avalanches, and to exploit the insulating value of the snow cover, as any photograph of a Swiss chalet would make manifest.

Timber framed floors, uninsulated, continue to be constructed in many areas.

Thru'out Australia, vapor barriers are not mandatory, despite their widespread use elsewhere in the world. Without their use, water vapor emanating in the spaces below, penetrates the ceiling lining and lodges in the bulk insulation, where it condenses and accummulates. Wet insulation bleeds heat rather than retaining it, acting to the detriment and discomfort of the inhabitants of a building, and of its structure.

THRU'OUT AUSTRALIA, VAPOR BARRIERS ARE NOT MANDATORY, DESPITE THEIR WIDESPREAD USE ELSEWHERE IN THE WORLD

A PRACTICAL APPROACH TO THE ACHIEVEMENT OF ENERGY EFFICIENT HOUSES

In most areas of Australia, and many middle latitude countries world wide, wholly beneficial use can be made of real passive solar rather than mere low energy procedures. Canberra, the third sunniest of Australia's capital cities, annual, summer and winter, and the A.C.T. generally, may well serve admirably as the testing arena for a National House Energy Rating Scheme, but if it is to be successful, it cannot be that currently on the statute books. It must be practical. Where else in the world is there in operation a system that is theoretically based, lacks adequate verification of the measures to. e adopted on site, and involves citizens in unnecessary expense?

….. **IT MUST BE PRACTICAL. WHERE ELSE IN THE WORLD IS THERE IN OPERATION A SYSTEM THAT IS THEORETICALLY BASED, LACKS ADEQUATE VERIFICATION OF THE MEASURES TO BE ADOPTED ON SITE, AND INVOLVES CITIZENS IN UNNECESSARY EXPENSE?**

In the United States of America, the more severe climate, and hence the demands of consumers, has spawned less reluctance on the part of builders to pursue energy efficient building strategies. Moreover, practical methods of ensuring compliance prevail.

One such scheme operates in the following manner:-
When a building proposal is approved, and the builder applies for a construction permit, he is issued with a manual that contains drawings of numerous cross-sections thru floors, walls, ceilings and roofs. Each depicts a different combination of available materials that together constitute the minimum

insulation deemed necessary in that area of the country. The building Inspector also possesses a copy of the same manual. The builder is required to assemble each element In such a manner that the building Inspector can easily determine that the combination of materials specified, has been employed, usually by leaving a portion of the construction exposed to reveal the cross-section. This is an objective system, which offers choice, and does not preclude Innovation. Manufacturers of new materials can have the insulation values of their products determined, and the relevant cross-section employing them Incorporated in the next edition of the manual.

With this scheme there is no requirement for building proposals to be vetted for energy efficiency by an 'accredited assessor' employing subjective values, no computer modeling, and the minimum of bureaucratic interference. The work is there for all to see, both builder and inspector are working to the same criteria, and the determination of the insulating values of various combinations of materials and techniques remains in the laboratory, which is entirely appropriate.

THIS IS AN OBJECTIVE SYSTEM, WHICH OFFERS CHOICE, AND DOES NOT PRECLUDE INNOVATION.

RECOMMENDATIONS

- That the various House Energy Rating Schemes of all the States and Territories be suspended whilst a truly independent review is conducted into their practicality, cost effectiveness, and the restrictions they place on consumer choice. The B.C.A.B. and similar bodies should be excluded from having a presence on such a review committee,

- If It Is not deemed possible to entirely remove the role of government. in this field of activity, that all States and Territories enact solar rights legislation before Introducing a practical house energy rating scheme. Manuals containing Information with regard to the Insulating values of a wide range of combinations of materials for floors, walls and roofs be made available to consumers, builders and building Inspectors. That suggested insulation standards be set for specific climatic areas. Such standards to be the subject of negotiation between prospective purchasers and builders, incorporated into the building contract, and subject to certification by an architect, engineer, or private building inspector legally responsible for their determinations, thereby dispensing with the bureaucracy and consultants that have battened and fattened on State and Territory house energy rating schemes, With a practical scheme, the person conducting the building inspections can achieve more, in less time, and at considerably lower cost than is presently the case, making housing more affordable. The financial costs to a builder apprehended whilst attempting to subvert the standards would be such as to deter all but the most brazen. Moreover, consumers can visit the site and easily determine for themselves, without the aid of an 'accredited assessor' whether or not the builder is conforming to the, provisions of the building contract.

- That urgent consideration be given to the means and methods employed to subdivide land. Developers can still have short lengths of road, if they are prepared to abandon the traditional rectilinear lot, Subdivisions having narrow frontages and long side boundaries are totally at odds with developing an interesting streetscape, privacy, amenity, and good solar orientation for all.

- The appraisal of existing houses under schemes such as the A,C.T. Sale of Premises Act should be abandoned, as a consequence of being shown to be ill conceived, poorly administered, and resulting in assessments of little practical value.

- The greater the use of energy by households, so for the charge per unit. This measure should act as an incentive for householders to upgrade the insulation of their dwellings, for in general terms it is less expensive so .to do, than is the cost of heating an uninsulated space.

- As a symbol of the nation's commitment to energy efficiency, and as an example to many mid-latitude countries, the new residence for the Prime Minister, when constructed, should be a passive solar building, with hot water furnished by means of flat plate technology.

- There should be a national competition, conducted by an independent authority, to determine the most successful energy- efficient buildings constructed in the previous year. Houses should be rated for the energy efficiency of the appliances, in addition to that of the building.

- All government houses, existing and proposed, should have solar hot water systems installed as standard equipment.

- Any government assistance should be directed at improving many buildings a little. This will yield better results than Improving a few buildings a lot.

- That the Australian Greenhouse Office be disbanded. Much of the information it issues is available elsewhere, and specifically on the Internet, It has promoted few, if any, new initiatives, and has accepted all the provisions of the various house energy rating schemes without demur. It is not a pace setter, but a follower in the grooves of currently accepted practice, and has not demonstrated that it delivering value to taxpayers.

- That a total approach be adopted towards the Greenhouse Protocols. A person may live in an uninsulated, energy inefficient house, but if they, choose to wear warm clothing rather than employ artificial heating, and purchase energy efficient appliances, then they are making a contribution to the reduction in Greenhouse gas emissions. The house energy rating scheme zealots would have us believe that their preferences are the only means of saving energy, whereas, as in life generally, there are as many ways as there are folk who wish to pursue them. Making the population aware of the necessity of energy conservation is the important issue whilst allowing folk the freedom to make a contribution in their own way.