ENVIRONMENT AND NATURAL RESOURCES COMMITTEE

Inquiry into energy services industry

Melbourne — 14 March 2006

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Witnesses
Mr I. Koochew, Executive Director; and
Mr D. Perkins, Chair, Energy Subcommittee, Australian Glass and Glazing Association.
The CHAIR — I would like to declare open the Environment and Natural Resources Committee hearing on the energy services industry. I note the apologies of Ms Duncan and Ms Lovell for today’s hearing.

I welcome Mr Ian Koochew, executive director, and Mr David Perkins, who is the chair of the energy subcommittee of the Australian Glass and Glazing Association. Thank you very much your time this morning. All evidence taken by the committee is taken under the provisions of the Parliamentary Committees Act and is protected from judicial review. However, if you make comments outside the precepts of this hearing, they are not protected by parliamentary privilege. All evidence is being recorded, and witnesses will be provided with proof versions of the transcript within the next couple of weeks. I will hand over to you, Ian and David. We have allowed half an hour, so we would like 10 minutes at the end for questions.

Mr KOOCHEW — Sure.

Overheads shown.

Mr KOOCHEW — Chair and others, for us, and hopefully for many people, glass is a very interesting product. It is in every home and building, it is looked through continuously, and it is often cleaned somewhat reluctantly. But how many think about how it performs, particularly in relation to heat transfer? Or looked at another way, how many would have even the slightest understanding of how it performs?

Unfortunately ordinary glazing, the glazing you see every day especially in homes, has very limited ability to minimise heat transfer. It is very limited in keeping out heat in summer or keeping in the warmth during winter, so much so that the Australian Building Codes Board (ABCB) in its research into energy-efficient buildings describes ordinary glazing as nothing more than a thermal wound in the building envelope; a limiting part of the fabric that can negate all the good work done to insulate the balance of the building envelope.

So we could say, ‘Limit the windows’, but who wants to live in the dark? Consumers have driven an undeniable surge towards greater glazed areas in order to bring the outside in, to take advantage of views and to let the wonderful benefit of natural light stream in and humanise the building. Therefore we do have an issue, and what I would like to do now is look at that issue just a little more closely.

In an otherwise insulated building the vast bulk of heat that enters the building with ordinary glazing unfortunately comes in through that glazing. Similarly, in an otherwise insulated building, as we have in Victoria, the greatest heat loss from an ordinarily glazed building, is, unfortunately, straight out the window. Take another step — this inability of glazing to modify heat flow means that every day of every year consumers are pouring energy into buildings purely to make up for the energy that has been lost through the windows.

In physical terms the staggering truth is that in an otherwise insulated building that has been allowed to be built with ordinary glazing that building is using about 60 per cent more energy to heat and cool the building than is necessary. Therefore power stations need to overproduce to a similar extent, and the potential for costly power spikes, peaks or blackouts is unnecessarily exacerbated. Other developed nations simply do not allow such glazing. Unfortunately, therefore, Australia has the dubious reputation of having the worst-performing energy windows in the Western World.

The much-welcomed, by this industry in particular, introduction of 5-star housing to Victoria has gone part of the way towards creating an environment where consumers and the building industry are finally starting to consider the energy performance of the windows. For instance, in a series of studies on one of Victoria’s major home builders improvements of 2½ stars, and on occasions more, were regularly gained simply by changing glazing — and that was not high state-of-the-art glazing; that was to the next level of glazing beyond the glazing we have there currently.

Looked at another way, the bulk of Victorian housing until 5-star came along was rated probably 2 to 3 stars. Glazing alone can bring those buildings straight 5 stars. This is illustrated very nicely in this table. What I have done there is list the names of all the homes that we tested. They ranged in size from 19 squares to about 35 squares, which is representative of a large portion of those project homes that are built in Victoria right now, with glazed areas ranging from about 20 per cent to about 30 per cent of the floor area. That covers the range of buildings in Victoria.
I have listed those glazing-to-floor area figures in the last column on this overhead. All designs originally were significantly short of 5 stars, and some were as low as 2 stars. In all instances, and working with those homes in the worst orientation and changing nothing else, glazing alone took all designs to 5 stars. However, as shown in these examples on this particular chart, despite the fact that you have got a 5-star building, obsolete glazing can still be used.

You will see from one of the examples there, the courtyard example, you can still get 5-star with no change in glazing whatsoever. Therefore, these buildings will still waste an enormous amount of energy due to the thermal holes created by the presence of obsolete glazing.

In many ways Victorian homes are as well built as any in the nation; in fact in terms of insulation they are better. How was it then that Victoria and Australia have been allowed to lag in international glazing practices to such an appalling extent? Or, in an area of dramatic and high-speed technological improvement, how can windows, from an energy viewpoint, be no better than they were a hundred years ago? There are four major reasons why we consider that has been the case to this point.

Firstly, builders and developers have been firmly in control of the agenda. They see their jobs building something that looks attractive while being price competitive. No-one has cared about the energy performance of the window, therefore there is absolutely no reason why they should. Besides which, the builder and the developer do not have to pay for the running costs of the building, and, therefore, there is no need to worry.

Secondly, until Victoria made its moves and until the Kyoto agreement was considered, there was simply no energy issue. There has been the odd blackout; people get used to that, and there has been the odd newspaper report, but on the whole the community has been fairly blasé in its attitude towards energy. At the same time reverse cycle airconditioning is increasing exponentially, and of course modern technology is introducing new ways to plug into the 240-volt system almost every day.

Thirdly, the community at large — and that covers designers, architects, builders, regulators and consumers — is simply unaware that the glazing in its buildings is of such an outdated quality. You could point the finger at our industry and ask why have we not overcome the situation. That must be seen in relation to not only my earlier points 1 and 2 but also to point 4, which I am about to explain now — that is that our industry, while it is quite a large industry in its conglomerate sense, is one of the last remaining modern industries that is characterised by small companies that are overwhelmingly family owned.

There is therefore a distinct lack of the corporate muscle that characterises such industries as, say, steel, plaster or bricks. Coordinating the industry, therefore, can be a logistical nightmare. Funding industry campaigns similarly means appealing to members whose business interests are primarily local and whose financial vision is necessarily focused on the coming months rather than on, say, the coming decade.

Yet, despite this, our industry took a decision four years ago to utilise all our available resources and develop a campaign that would somehow overcome the issues at which we just looked. With the hiring of Arup Engineering to provide the scientific authority and Melbourne-based OMC to produce a PR campaign along with countless hours and the contribution of expenses from senior industry figures, such as David, the industry has run an intensive four-year PR program designed and dedicated to ensuring that glazing is fully recognised for the enormous opportunity it represents for the true development of energy efficiency within the building sector.

We have worked with governments at all levels, we have conducted training clinics around the country for all manner of building industry groups, and we have worked assiduously through the media to gain nationwide support in TV, radio and newspapers. Most recently we have enlisted the support of the prestigious American National Fenestration Rating Council (NFRC) to assist in designing an internationally accepted window rating scheme, which will ensure that in Victoria and the rest of Australia window energy performance will be available to everybody in a manner which is scientifically without question. We have worked with the designer of AccuRate, Angelo Del Sante, to ensure that an appropriate interface is available that will allow window energy performance, which can be quite a complex issue, to be accurately simulated by the rating program. We understand that is the rating program that will be used by Victoria’s own First Rate program very shortly.

Further, and with the excellent assistance of Arup, we have created a world-first software tool that will enable designers, builders, regulators and consumers immediate and complete information on the energy performance of any window and what window can be used to achieve any given window rating. A further excellent output is the
creation of an authorised certificate — which David will touch on a bit later — which will list all the windows in a building by description, by location and by performance of the window, and the window performance of the total building project. It cannot be duplicated, and it can be used to show compliance with the building certificate.

What we have also done is ensure that at the same time the industry can provide world-class supply of energy efficient glazing at world-competitive prices. Within Victoria, for instance, we have two of the three major Australian suppliers. Accordingly we have sufficient capacity right now to provide energy efficient glazing for every new building at least twice over. That is without the help of an ever-ready supply from not just China but from all over the world.

As a further example, DMS Glass, which is a major industry participant right here in Victoria, recently commissioned a state-of-the-art plant that is matched by only one other in the whole of the Asian region. It is a magnificent plant. If we look at pricing as an example, we see that double-glaze units right now can be purchased in Victoria for just $25 a square metre over and above the cost of bottom-of-the-range glazing. That represents about $1000 for a complete house. In the examples we saw before one mentioned was the Toscana. Let us translate that into return on investment.

Energy savings repaid that cost in one year. For all designs the average payback time was less than five years, a figure that will be shortened considerably as the price of power — as it must — increases. In commercial buildings, where capital equipment can be considerably downsized because an energy-efficient glazing, the ABCB calculated a payback of less than one year.

The combination of appropriate and farsighted government policy that has been introduced particularly in Victoria, together with a highly supportive industry body and industry, has made an excellent start. However, there is still a long way to go, and I would now like to ask David, the chair of the energy subcommittee, to finalise the presentation.

Mr Perkins — I would like to add a couple of comments to what Ian has prepared. The first is that with the advent of the new AccuRate energy modelling package that we understand will be incorporated into FirstRate in Victoria in May, we have a modelling package that is as good as that anywhere in the world, and the glass industry has worked very hard to link into that modelling package, the availability and the thermal performance of windows. So we will have that ability in place as soon as FirstRate is upgraded.

Similarly we have engaged with BASIX in New South Wales and with the ABCB so that there will be a national availability of that information. So the ability to link in with the industry is there. The industry has also devised a range of protocols to ensure that the way the industry measures and audits the claims of thermal performance is managed similarly to the way it is managed in North America by the NFRC, as we mentioned before. So there is a way for the industry to link in with the energy rating tools to make sure that consumers are getting what they think they are getting and know what is required to upgrade the thermal performance of their dwellings and commercial and industrial buildings.

The measurements — to bother you with a little bit of industry speak — are U-value and the solar heat gain coefficient. U-value is the measurement of conductance of temperature either in or out of the window, similar to R-value in opaque insulation, which you may be familiar with. It is actually the inverse of — and calculated slightly differently because of the visible light coming through a window — and similar to R-value in insulation.

Solar heat gain coefficient is the ability of the glass to resist direct thermal transfer — that is, heat from sunlight hitting the window. They are the two measurement numbers that are used by the tools that calculate the thermal efficiency of buildings. They are globally used numbers; there is an internationally accepted protocol for calculating them and comparing them. Our whole system, come May, will be based on that internationally accepted protocol. The toolbox that the industry is spending a fortune on creating is a way of measuring the interface of the glass with windows so that the numbers that are presented to consumers and are being used by the rating tools are combined window and glass system numbers. Combining those numbers is not just simple arithmetic; it is quite complex, and the industry has devised a whole toolbox to be able to provide those numbers to consumers.

We have painted a picture — I will also add that the industry over four years will spend nearly $1 million of voluntary contributions from participants on making all this stuff happen. We are just about exhausted financially from trying to raise that amount of money from a bunch of relatively small players, some of whom are a year or two away from really starting to see any benefit of this in their business. So whilst we have painted for you a
picture of where we have come from and what we are trying to do, the one thing that we would beg for — and I mean ‘beg’ — is for the compulsory disclosure of the thermal performance of windows so that there is a certification or labelling requirement similar to that required for airconditioning or car mileage performance.

If we could have mandatory disclosure of the thermal performance of windows, it would help tremendously not only consumers understand what they are getting for their money, but also the industry to appreciate the importance of compliance.

The leaders of the industry have basically funded what we have done to date. Everybody can participate for very low cost, but we are having great difficulty in getting the small players who make up the bulk of the industry to embrace this and be able to offer products that are freely available but not well understood by the small people in the industry. We are really seeking help from the governments of Victoria and New South Wales particularly in helping us require the mandatory disclosure of thermal performance. That is already designed to link in perfectly with the regulatory tools. In fact, without mandatory disclosure, we do not know how compliance will be assured for people that are energy rating their houses, and then we do not know how they are going to be certain what sort of performance of windows they are getting. We think that is a big hole in the regulatory arrangements. That is it from us. We are very keen to receive questions.

The CHAIR — Thank you very much.

Mr DRUM — It was great to hear the presentation. Sorry I was late. Last week when we were interstate we heard how, with electrical appliances, they have come up with a software package which can transfer the rating out of 100 on a particular washing machine through a computer and it spits back out the dollar savings from A machine to B machine. Is there a possibility that something as stark as that could happen in your industry where you could take builders through the process, take potential home builders through the process? It is now down to the stage where they are becoming cost effective at only $1000 extra per household.

Mr PERKINS — The difficulty with that is that we have no idea when a window is made or before a piece of glass is made where it is going to be used in the building, nor do we necessarily know the shape of the building or the design of the building, or anything else about it. It is not like two appliances: no matter where they are used you can compare their thermal efficiency. In the case of windows, where they are used in a house, the size of the window, which orientation it is on, exactly the circumstances of the particular building dictates the difference. That is why things such as FirstRate and AccuRate exist, to enable that kind of model. FirstRate and AccuRate, by plugging in the different windows that may be used, can calculate the improvement in thermal efficiency of the building, so it is more properly a function of the rating tools than it is of the glass, because it entirely depends on the house.

Mr KOOCHEW — Could I add that we have run quite a number of modellings on designs of builders. If that is of interest we could send along some information that shows, for instance, how much energy was reduced by changing the windows and the cost benefit of doing that.

Mr DRUM — My main level of interest is at what stage in the process, as either a potential home owner or home builder, do I need to be convinced by the builder? What is in it for the builder to tell me, ‘You should be going for these windows over here’?. At what stage in the process, do I tell him, ‘I have seen an advertising campaign on TV about these double-glazed windows. What have you got for me?’? Does it have something to do with local government at that stage? At some stage in there we need a trigger where this discussion has to happen with each and every home builder, their particular builder, or with their glazier.

Mr PERKINS — We agree exactly, and that is why we are asking for mandatory disclosure of the thermal performance. We believe if consumers and builders are obliged to compare the thermal performance of windows, the message will get through to the marketplace. The market will do its own work in terms of providing the best thermal performance for the lowest cost. All we have to do is set the competition at that point. Right now the only value equation in the window industry is price. It is price versus price — how many square metres for how many dollars. Nothing else is measured. We need to compare price versus thermal performance, and that is what we think mandatory requirement of thermal performance will provide. It is then possible for consumers and builders using the regulatory tools to work out the energy savings, and you can then, through the regulatory tools, work out the theoretical dollar savings by upgrading the windows, but it is beyond the window and glass industry to do that.
The one thing that we can do on this mandatory disclosure is clearly show a percentage improvement in thermal performance compared to base case windows, so this window with this U value is 50 per cent better for keeping the house warm in winter than that ordinary window, or this one is 50 per cent better at keeping the heat out in summer than this other window. Those numbers are scientifically rigorous and we have a way of delivering that, but without the mandatory requirement to disclose it, the industry compliance is much lower than it should be, and builders are not getting the message either.

Mr HILTON — I suppose this is following on from Damian’s point. You can talk about thermal performance, and probably that would be pretty meaningless to the average person. What is really meaningful to them is the dollar savings and the additional cost of putting in these different windows and the return, so unless the information is presented in that way I must admit I am very sceptical about whether thermal performance indicators will be particularly effective.

Mr PERKINS — We agree. It would be great to be able to provide financial data to home buyers of what the dollar savings may be, but we cannot do that. The regulatory tools that are already in place could work that out. FirstRate could be modified simply to show, ‘All right, if you change to this level of thermal performance in your house, you will save this many dollars in heating and cooling’, but since we cannot control where our windows are used, we cannot work it out for individual houses.

Mr HILTON — Who is responsible for making that calculation? Presumably it can be done, but who does it?

Mr PERKINS — We would think the builders are in the best position to do it, and consumers need to ask for it. Builders have to rate houses now, and they can work out the most cost-effective way to get to an energy rating, so they should be able to work out it. I would also make the point that our experience is the decisions for what is built in a house are not always driven by arithmetic of energy costs. I do not think people work out the energy efficiency of a granite bench top or the payback on wool carpets. I think an awful lot of it is comfort and style and things other than just thermal efficiency, but the signals have to be sent to the consumers through the builders, I think.

Mr HILTON — You are really relying on the goodwill of the builders who are probably more motivated to sell a house.

Mr PERKINS — Correct.

Mr HILTON — Which is probably based on price.

Mr PERKINS — Correct.

Mr KOOCHEW — Your initial point needs to be expanded to say there is also a community cost involved here. If we are allowing building stock to be built, which is shockingly wasteful for energy, that is a cost we have to consider very carefully.

Mr SEITZ — As to the big building companies, I concede the point you are making that the manufacturers are usually small family businesses. I have several like that in my electorate. They work from the back of the garage, really, in their own home producing aluminium windows and at no stage is any consideration given to energy or anything like that. It is the price. We came to the 5-star rating because some of the builders — Henley Homes in particular — were keen to have a rating because they are using that as an advantage for sales point. What is it with the big builders who go for double glazing as a selling advantage for them compared to the small builders again? If it is $1000 extra in a home, the big builders can absorb this where the guy who builds maybe five houses a year would not, and that would therefore lift the standard. Have you made approaches on that with industry?

Mr PERKINS — We have tried very hard to encourage builders to pay attention here, as I am sure the Victoria government has, with 5 star, and the result to us seems to be that some of the big builders will work it out and be very cost effective with it. Maybe 70 per cent of houses are built by small builders — at least 60 per cent of houses are built by small builders. No matter whether it is big builder or little builder, the cost of energy efficiency in glazing is $10 to $15 per square metre of floor area for houses that sell for $800, $900 per square metre — cheapest possible — up to apartments in Victoria which are now selling at $6000 per square metre and higher. The
upgrade cost is only $10 to $15 a square metre of floor area. It is tiny, so it is not a cost-driven issue with the builder.

The issue is lack of information in the marketplace in our view. Whenever we get to talk to people and say, ‘Would you spend $15 a square metre of floor area to make your house energy efficient for the rest of its days?’, they say, ‘Of course we would’, but they do not know how to require that of their builder in the process. That seems to us to be the problem.

Mr SEITZ — Is there sufficient support given in policy-driven and technical advice and financial advice from the commonwealth and state government, for instance, as we have done with a program like Our Water Our Future?

Mr PERKINS — No. We would love to see more publicity in relation to how to get to 5-star cost effectively. We think consumers with the right information will be the most powerful in driving the builders to comply, but we think a lot could be done to educate them. That is a good point.

Mr BENJAMIN — I am just interested to know if you have produced any papers on the mandatory disclosure. I am particularly interested in who would regulate the program, who would do the accredited testing, who bears the cost, whether it is just a simple label at point of sale, how it would work.

Mr KOOCHEW — That is a really good question. We have developed as part of the tool box that we mentioned earlier a little piece of software which can rate all the windows. At the same time it can produce a certificate as to what windows are located in which part of the building, so that a building inspector, for instance, can use that certificate and match window by window what is on the compliance certificate. What Mr Perkins has given you there is, for instance, a label per window so that its performance — the solar heat gain coefficient and the U value — can be shown on that label, but then for compliance you need a project certificate which will show all the windows that should be there and you can mark them off one by one by if you have an authorised certificate, which we have the capacity to provide, but we need to be able to get some legal backing to ensure that that is a must in each instance. At the moment you can get away with putting in a poor window, and it is there for the life of the building, which is a dreadful shame.

The CHAIR — Thanks very much for your presentation. The committee in its last inquiry went to Europe to have a look at different building codes, and Joanne Duncan, who is not here today, and I looked at windows — triple-glazed windows, double-glazed windows that opened in every direction, ones with venetian blinds inside that never needed dusting. I came back particularly despairing of where the glazing industry was in Australia, so it is really good to hear today that there is a decided shift in how we are going about our glazing. I think you are right — builders build homes to sell. This is the window, so you stick the window in. No-one has ever really taken a lead on double-glazed or energy-efficient windows, and thus the industry standard has just never been there. To get to my question, if I go out to buy double-glazed windows, do I see this brochure today, or is this what you would like to see?

Mr PERKINS — Can I make two comments? First of all in the markets where you went and saw good windows, the thermal efficiency of the glass is a legal requirement. It is not a question of the energy rating of the building; it is ‘Thou shalt not use glass with a thermal rating of no less than’, and that has been the case in Germany for over 20 years, it has been the case in North America for nearly 20 years. We are 20 years behind in what we require to be put in houses. The industry does not particularly have a view whether we would like thermal performance to be mandated or not. It is mandated for insulation, for example, but not for windows. We certainly do have the view that every window that is not insulated is a hole in the building for the rest of its days, so there is a real opportunity to require the thermal performance of windows.

The other point I would make is that where that happened in North America, an unintended or unexpected result was that voluntarily the home owners purchased upgraded windows to replace the windows in their houses once it became a requirement, so now 50 per cent of the window market in North America is renovation and replacement, so what you are effectively doing is fixing up the thermal efficiency of old houses, which is a big problem. How we otherwise get to making old houses thermally efficient, I have no idea. The point I would make about all these products is that for 20 or 25 years in big buildings where the thermal efficiency and the cost effectiveness is calculated by the building owner-developer, those buildings have had energy efficient windows for over 20 years. You can look around any of the big cities in Australia, all the big buildings are double glazed with the sophisticated
codings because it is cost effective to do so. The only reason it does not happen in housing is that no-one works it out.

The CHAIR — Thanks for your time.

Mr PERKINS — We appreciate the opportunity very much.

Witnesses withdrew.