



Submission by the
Housing Industry Association Ltd

to

**House of Representatives Standing Committee on
Environment and Heritage Inquiry into a
National Sustainability Charter.**

September 2006

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1. *Introduction and background*

The following submission is provided in response to the House of Representatives Standing Committee on the Environment Inquiry into a Sustainability Charter. It provides comments on a proposed charter together with specific references to the experience of the industry in respect to: sustainability requirements on residential construction; attempts to control industry practices through regulation; the adverse effect this has had on housing affordability and the need for investment in broader infrastructure that allows Australians to live sustainably.

The Sustainable Cities Inquiry examines some of the key contributing elements of a sustainable Australian city. HIA provided a major response to the Inquiry. The subject of the current inquiry concerns the Commonwealth's involvement in the development of a Sustainability Charter that incorporates national targets in the key areas of:

- Water;
- Transport;
- Energy;
- The built environment; and
- Ecological Footprint

In view of the extensive suite of sustainability rules that are applied through a myriad of local, state and federal regulation, HIA questions the need for a new National Sustainability Charter and a stand alone bureaucracy to support it. HIA believes that there may be more value in the Commonwealth identifying how a Sustainability Charter may *add value* in coordinating existing regulatory arrangements.

The development of good regulation dictates that all new regulation must include accurate measures and assessments of net public benefit along with the associated government, industry and private costs. In the absence of any clear costing data around the Charter, the inclusion of “aspirational” (and moveable) targets, poses some concern with respect to how specific initiatives of a Charter may be developed.

The housing industry is a highly efficient and competitive industry which is forging ahead with the development of innovative, sustainable building products, largely in response to consumer demand. As such, there is an array of non regulatory measures that are achieving results in excess of any minimum mandatory regulations or targets set. Governments may therefore be better placed in respect to achieving tangible and sustainable outcomes by investing in front end infrastructure to facilitate more sustainable outcomes.

2. *Importance of cost benefit analysis in regulation making*

The development of good regulation dictates that a net public benefit should be established prior to any new requirements being introduced. The open ended nature of the “aspirational” targets identified within the proposed National Sustainability Charter are contrary the requirements of good regulation, as they create difficulties in calculating definitive costings against an ever changing policy objective. HIA actively opposes regulatory initiatives that propose best practice at any cost.

A Sustainability Charter that identifies aspirational targets with no attempt to qualify or quantify how these targets will be developed or costed, may result in exponential growth in the cost of related regulation, and a significant and unchecked cost burden for governments, the private sector and consumers.

The definition and measurement of sustainability, together with the associated regulatory enforcement is a major concern for both the housing industry and existing and future home owners.

The strength of the environmental lobby in most states/territories means that sustainability is now a “race to the top”, with all levels of government competing to have the best, most environmentally sound regulations without appropriate recognition of associated costs and benefits. The most recent example of this was the introduction of 5 star energy regulations by the Australian Building Codes Board (ABCB), without appropriate consideration of the relevant cost to consumers. The approach taken on this issue forced the Federal Government to conduct an ex-post evaluation of new building energy regulation (including 5 star energy regulations for new homes) to assess the associated cost and benefits of new regulation. HIA advocates that such regulation should not be introduced until a detailed cost benefit analysis had been conducted together with a detailed Regulation Impact Statement (RIS).

3. *Need to assess both benefits and costs of a Sustainability Charter*

In many instances sustainability requirements are being forced on new home owners without any consideration of efficiency, cost or practicality. This cost shift means that new and first time home buyers (in many instances those least able to afford such costs) are bearing the brunt of sustainability and other planning requirements. This is both inefficient and inequitable.

This burden is now clearly evident through the application of development infrastructure levies at both the local and state government level is causing a crisis in land prices, particularly in Sydney where land prices have increased by 64 per cent in the last 30 years and infrastructure levies can be as high as \$120,000 per allotment.

In what is already a complex regulatory environment, the involvement of the Commonwealth should only be considered where there is a clearly demonstrated benefit in simplifying current arrangements and providing some national consistency in regulation and regulation making. The charter should not serve as an additional level of bureaucracy providing even more regulation for industry and consumers to contend with.

3.1 Regulatory scrutiny and non regulatory initiatives

Sustainability principles, already applied at state and local levels, are increasingly influencing and dominating planning and land-use decisions, development control policies and construction processes across Australia. Regulation is becoming the primary response to policy needs of governments, irrespective of economic implications. New regulation has and continues to be introduced on the basis of what may be perceived to be ‘good ideas’ or administrative convenience with little consideration of net benefit to the home-buying public or any real environmental gains.

Every state now has some level of planning and technical provisions based around sustainability. Most regulatory measures being introduced relate to the individual buildings, requiring them to be designed and constructed to minimise energy consumption and conserve water resources. The application of BASIX in New South Wales, 5 Star energy efficiency regulations in Victoria, water efficiency regulations in the ACT, water product labelling as well as individual council regulations are all examples of this. (See Appendix 1 providing case study for 5 Star Energy Regulations for all new homes).

The House of Representatives Sustainability Charter discussion paper states that “sustainability is a journey”. In a regulatory sense this suggests that targets will be ever increasing. The use of the term ‘aspirational’ is therefore concerning as the associated costs are difficult to quantify. The proposal to change or update them regularly provides a further complication for industry. Targets which would presumably be set by regulation may very often be either unachievable or constantly changing.

Good regulation requires policy instruments to be compatible with economic realities and deliver a net benefit. Regulatory reform must be part of the Government’s wider micro-economic agenda to develop a healthy and productive business environment.

Where regulation is proposed it should encompass:

- Identification of the problem – evidence, extent, social and economic cost
- Clear identification of the objectives
- Full consideration of the alternatives before regulation (should be least net cost or maximum net benefit)
- Cost benefit analysis – no disproportionate burden should be placed on individuals or business
- Application of alternatives – non regulatory solutions should be fully explored

- Minimum necessary regulation to achieve policy objectives

Therefore, rather than rely on mandatory regulatory initiatives, HIA believes further consideration should be given to non-regulatory alternatives that could be pursued to achieve better overall results. The promotion of voluntary and self regulatory methods will generally produce a higher level beyond that which is achieved with a minimum regulatory standard. Industry is leading the way with some very innovative solutions already on the ground.

Manufacturers and suppliers to the housing industry are innovatively working towards solutions which meet a general client demand for “green” solutions and appliances in their homes. Innovations to meet regulatory changes can generally be developed with the appropriate lead time and the market will drive the need for these without any national targets in place.

3.2 *Likely dividends*

Just as there is a requirement to fully assess and analyse the associated costs and benefits, HIA considers there should be a requirement to examine the possible recipients of dividends from the implementation of a Sustainability Charter. Industry and individuals are often left in the dark regarding the needs and benefits or new initiatives and regulation. This assessment will aid in executing an education program, but will importantly provide justification for future investment.

HIA believes there are likely to be considerable dividends for both local and state governments through investments in ‘front-end’ type infrastructure. Investments in roads, more efficient power generation, public transport and water initiatives will provide long-term savings in recurrent local and state government budgets. An assessment of these alternatives and associated savings or dividends needs to be fully explored as they may produce better and more sustainable results.

4. *Planning and sustainability*

State based planning systems often rely on restricting urban growth, using sustainability arguments as the justification. Government planners managing residential land supplies have been influenced by a myriad of studies that have examined the ‘cost’¹ of fringe development compared with development in the established parts of cities. The 1991 National Housing Strategy assumed that substantial subsidies were involved in fringe development insinuating that it is less sustainable to build in Greenfield areas. The 1993 Industry Commission study, however, could not find any evidence of subsidies being applied².

¹ The costs of urban development include environmental and social costs as well as the financial costs associated with infrastructure provision.

² *Taxation and Financial Policy Impacts on Urban Settlement*, Industry Commission, 1993.

The cost of infill development can in fact be higher than the cost of developing housing on the fringes of our cities further supporting the need for higher growth levels at the fringes. Infill development costs rise due to constraints typically associated with working in an existing residential area. Costs include access, restricted hours of operation, limited storage of waste, limits to existing infrastructure or indeed the cost of upgrading it, as well as high land costs.

More recent reviews have pointed to the inevitability of outward growth to accommodate a substantial portion of expected population increases – at least one quarter of long term housing demand in our fastest growing cities. State government policies and funding should encourage the expansion of cities and planning policies which support and facilitate this. There will continue to be strong demand for new housing, particularly from young families, in outlying regions.

Sustainability arguments used to restrict growth are largely an excuse, and would appear in many instances to be designed to hide the lack of long-term infrastructure investment by governments. Investment in infrastructure is crucial in ensuring sustainable outcomes for both new and existing communities.

4.1 Planning system inefficiencies

Highly inefficient state based planning systems across the country are causing long delays and add to the cost of housing. HIA has worked on a more nationally consistent approach to planning systems, as is the charter of the Development Assessment Forum (DAF). To date DAF has been well supported by the Australian Government, but its progress has been slow, reflecting the difficulty of reaching consensus amongst state and local governments. The setting of national targets in planning, (based on previous experience by DAF) is therefore somewhat problematic.

4.2 Infrastructure investment – essential to achieving sustainability

Rod Fehring, Chief Executive Officer of Lend Lease Communities, in his 2004 “Infrastructure: Why First?” paper³, suggests that amongst the threats to the effective management of our urban systems, as well as the threats to social capital creation, is the funding and provision of (urban) infrastructure. He explores the mismatch between

³ Infrastructure First is an independent group of leading business, community and academic commentators. Launched on 25 May 2005, the initiative responds to growing concerns that Australian governments are failing in their duty to supply and maintain the infrastructure needed for successful and fully-functioning community life, in effect passing our responsibilities on to succeeding generations. A series of papers were delivered by Infrastructure First throughout 2005, and Rod Fehring’s “Infrastructure Why First ?” paper was amongst these.

⁴The AGO’s National Greenhouse Gas Inventory 2002 (the latest one available) attributes 1.6% of national emissions to the ‘residential sector’. The inventory however accounts for emissions from electricity from the point where emissions occur.

governments' saving and household spending and refers to the balance of urban management which seems to have tipped back towards cost minimisation rather than managing net community benefit.

Increasingly, debt averse governments are relying on a user pays approach to infrastructure development. Most (planning) metropolitan strategies support this approach which generally relies on the supply of features by the development industry in order to make projects more sustainable. The reality is that these policies must ultimately be paid for by new residents, resulting in higher housing and land costs.

4.3 Target areas that offer greatest opportunity for improvement

The Federal Government has identified building and construction as a major user of resources, and a significant generator of waste and pollution. However, housing does not generate significant greenhouse gas emissions; the sector accounts for only 1.6 per cent of total greenhouse gas emissions⁴.

The housing industry does not seek to evade its contribution to the national effort regarding sustainability. However, HIA remains concerned that regulation targeting efficiencies in energy consumption and environmental efficiencies directed at housing is delivering decreasing marginal returns or savings at ever increasing cost.

The Productivity Commission identified that approximately 70 per cent of the primary energy consumed to supply electricity to end users is lost in conversion, transmission and distribution. This loss represents 30 per cent of total primary energy used and highlights the lack of investment in infrastructure.

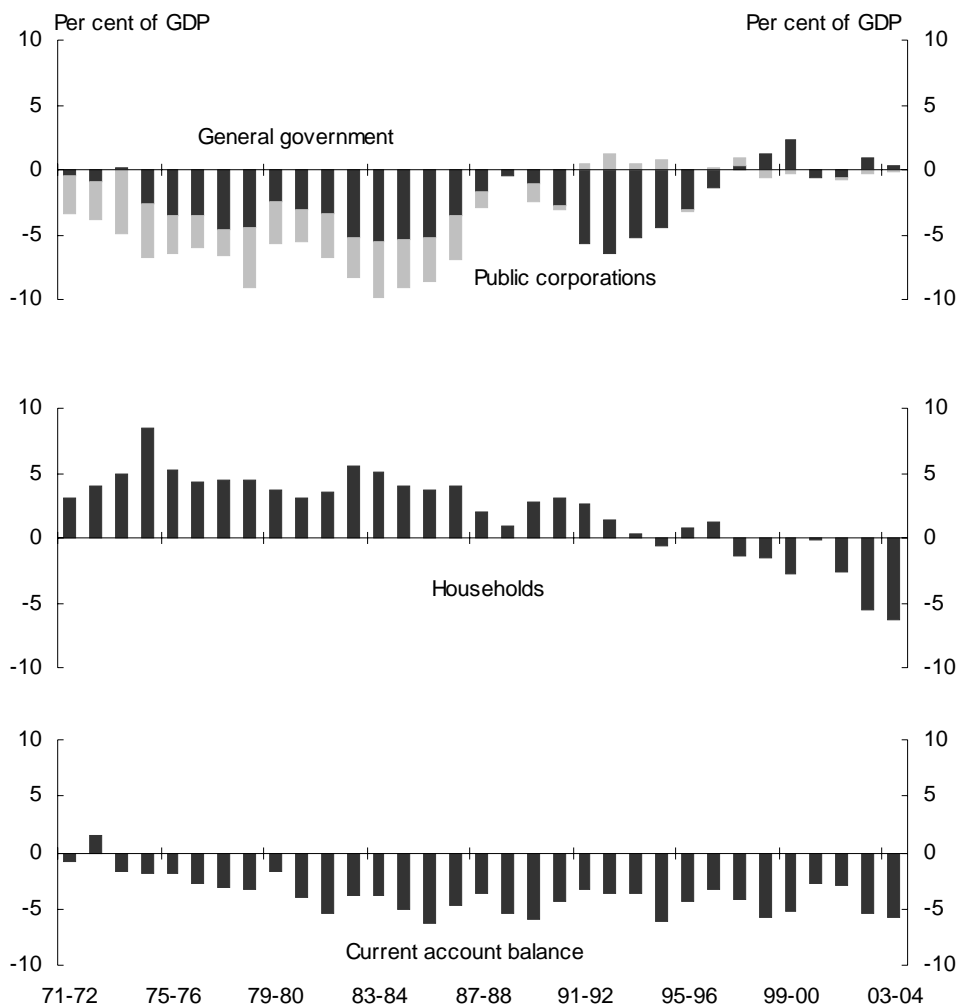
The flaw in sustainability regulations which target high cost, end of pipe solutions such as 5 star energy ratings and mandatory rainwater tanks, will become evident over the next decade as housing, and other affected industries, identify new technologies to achieve more efficient, front end solutions.

Public infrastructure reform will have a far greater impact on achieving improved sustainability outcomes and reduced greenhouse gas emissions, energy and water consumption, than any routine regulation of housing standards. It also avoids the politically unsavoury task of setting realistic prices for water and energy. The Federal Government should focus on higher-order greenhouse gas issues, such as energy generation and transmission, along with the transport and commercial sectors, as well as encouraging reform of utilities pricing.

The increase in development levies to cover piecemeal sustainability requirements (and broader physical and social infrastructure items in new housing estates) adopted by state and local government has seen a massive cost shift from public debt to an alarming

increase in household debt. Table 1 below demonstrates the burgeoning private household debt rates when compared to public debt.

Table 1: Net Lending – Households vs Governments



Source: HIA Economics

5. *Housing affordability*

In the absence of a major policy shift, household debt levels will probably continue to rise. Authorities increasingly rely on development levies (particularly in New South Wales and Victoria) to pay for on site infrastructure, such as kerbs, power, and sewerage connections, and for off-site infrastructure. Development contributions for on-site and off-site infrastructure are highest in New South Wales where amounts of over \$120,000 per lot are levied.

Homebuyers in Victoria will soon be charged an additional \$8,000 per allotment for infrastructure development through the Victorian Government's new infrastructure levy, with the capacity for this levy to readily increase. State Government departments in

Victoria also now have the power to individually levy development charges for services (services that would have previously have been covered by governments, for example schools, hospitals, and other public amenities). Ensuring the levies collected are expended in the communities and developments where they were raised, and done so in a transparent and accountable manner is an issue of major concern.

Unlike broad ‘user pays’ principles, the levies and tax described above are paid by a relatively small sector of the community - new homebuyers. This group is required to provide public goods via infrastructure levies even though the benefits are consumed by the wider community over a number of generations.

The most notable affordability change resulting from the implementation of development levies is the increase in land prices. In Sydney, land now comprises over 60 per cent of the final price and has doubled its share of new housing costs. In Brisbane and Perth more than 40 per cent of the new house price is accounted for by the land component. Vacant land prices in the Adelaide Statistical Division have increased by up to 60 per cent in the past 5 years. By way of comparison, construction costs only increased by 5.7 per cent in the 2002/03 financial year.

Table 2. Share of Land in New House Prices

	1976-77		1992		2005	
	New House Price \$	Land %	New House Price \$	Land %	New House Price \$	Land %
Sydney	\$49,010	32%	\$189,800	44%	\$565,000	62%
Melbourne	\$63,200	24%	\$169,000	24%	\$340,000	38%
Brisbane	\$46,280	21%	\$164,690	39%	\$362,000	41%
Adelaide	\$53,970	16%	\$125,970	26%	\$272,000	44%
Perth	\$57,640	22%	\$115,730	32%	\$296,000	47%

Source HIA Members

6. *GreenSmart*

There is an opportunity for governments to examine a wider range of voluntary, market based incentives to reduce consumption and create more sustainable communities. Industry must be given the flexibility to develop initiatives that are affordable, effective and sustainable. Incentives and options such as tax credit schemes and other financial rewards should be encouraged and promoted by all levels of government. Industry is also influenced by consumer choice which is fuelling the need for more sustainable housing products.

HIA's GreenSmart program fully embraces industry and consumer keenness for environmental knowledge and market branding. GreenSmart delivers a number of opportunities by training builders so that they may be involved in a responsible, pro-active environmental program.

The HIA GreenSmart program delivers:

- National & Regional Successes – GreenSmart Villages, a National Awards Program , Regional Events & Partnerships
- Training Developments – over 2000 professionals trained; modules under development to provide flexibility and link with CPD program requirements
- Growing Consumer Interest – the GreenSmart Magazine is published nationally. The magazine is a leader in its field by taking the environmental construction message directly to consumers
- Large & small company interest – with a growing number of regional partnerships
- Government Recognition – particularly strong in Western Australia and Queensland

These successes are proof that, despite a growing trend in environmental regulation, the green message remains relevant to the broader residential construction industry. Together with the proper support of governments, schemes such as these can provide far greater results than national targets or minimum mandatory regulation.

7. *Concluding comments*

Housing has become an easy target for sustainability regulation. Government leadership is required to achieve sustainable outcomes, and partnerships with industry can deliver innovative solutions to assist with greater environmental outcomes. Investment in critical infrastructure is desperately required to not only drive outcomes but to ensure housing affordability is retained. Cost shifting of critical infrastructure to consumers and the private sector is not sustainable in terms of housing affordability.

Existing state and local government requirements may limit the ability for a national charter to be implemented. Several state governments have proceeded to introduce new regulations via their planning systems. Unfortunately, state planning systems do not provide an avenue for transparent and publicly accountable regulation. Mandatory state regulation of sustainability must be challenged as it undermines the benefits of pricing or infrastructure investment as alternative solutions.

In relation to energy efficiency, when compared to other industries new housing contributes a mere 1.6 per cent of Australia's greenhouse gas emissions. Major contributions are made from electricity generation itself, the various transport modes and

from the use of energy fuels in the manufacturing industry. In the Productivity Commission's report on energy efficiency (released in 2005), the usefulness of energy regulation applying to housing was questioned. Not only did the report cast doubt on these regulations, it also noted the high compliance costs and the conflicting signals given through energy pricing.

These figures do not abrogate the residential industry of its responsibility to contribute to greenhouse gas reductions. However, they do help put into perspective the areas where more substantial environmental gains might be possible, such as through targeted government policy where the whole community (government, industry and households) takes its share of responsibility.

However, government needs to show leadership in the provision of urban infrastructure and innovative funding mechanisms that do not over-burden home buyers, but allow them to live sustainably. Governments should also rely on voluntary, market based incentives to reduce consumption. Industry driven initiatives that are affordable, effective and market driven will be more sustainable.

A consistent approach is also required in determining what requirements should be mandated through regulation, with appropriate consideration being given to affordability implications and the often confused role of regulation to eliminate worst practice rather than drive best practice. In most jurisdictions, sadly, there has been a distinct lack of broad stakeholder consultation to determine the correct regulatory mix for achieving sustainability and its correct focus.

More regulation and bureaucracy for implementing sustainability, including elaborate reporting mechanisms are not the answer. Governments should avoid the temptation to create any new requirements and levels of bureaucracy, but should instead look to practical initiatives including increasing the investment in infrastructure and a closer examination of non-regulatory government-industry collaboration to achieve a sustainability charter and sustainable solutions.

8. Key recommendations for a 'National Sustainability Charter'

The need for a new National Sustainability Charter must be considered against the extensive suite of regulations relating to sustainability. There is therefore a requirement for the Federal Government to identify where and how a proposed Charter would *add value* to these existing arrangements.

New or amended sustainability regulations should not be implemented without the completion of comprehensive cost/benefit analysis.

Affordable sustainability initiatives are only possible through local, state and federal government investments in new infrastructure. Investment in new 'front-end' infrastructure in the areas of transport, water and electricity generation are vital in achieving improved outcomes in the areas of sustainability.

Government's tendencies towards a "compact cities" approach to development are flawed. Development on the fringes of our cities is sustainable and there will always be a strong demand for it. All sustainability policies pursued by governments should make allowances for this.

The cost of developing in fringe areas is often more efficient, favourable and sustainable than solutions advocating only developing in infill sites.

Development policies should balance sustainability needs with housing affordability.

The development of relevant infrastructure investment and pricing regimes for natural resources is required.

A whole community response to sustainability is required rather than purely targeting new home buyers.

Implementing sustainability requires consistency and clarity in terms of mandating how buildings should be constructed and fitted-out. Regulatory approaches should not embrace 'environmental best practice' as a basis. The role of legislation is to define an acceptable community standard that is practical and cost-effective. Legislation should therefore aim to eliminate worst practice, but at the same time be delivered in an information framework that guides best practice and encourages a positive, informed market response to it.

Appendix 1

5 Star Case Study – More Regulation is not always the best solution

HIA's views are largely based on actual cases where governments have undertaken to introduce new regulation in the absence of cost benefit analysis or with questionable data.

In the case of the Australian Building Codes Board decision to introduce 5 Star energy efficiency two independent bodies, (the Productivity Commission and the Victorian Competition and Efficiency Commission) found that that the decision was not justified on the available evidence. The environmental benefits of 5 star regulations are uncertain and at best marginal, while the costs to home buyers are likely to be greater than predicted by regulators.

The alleged environmental benefits rely on computer modelling of doubtful accuracy and fail to take into account consumer behaviour. Environmental benefits are very modest, both in comparison to Australia's abatement target and the energy savings already being delivered by four star energy regulations. By 2010, after three years of 5 star regulations, 4 star regulations will still account for almost 94 per cent of abatement in the residential sector. Five star regulations will contribute less than 7 per cent of abatement (i.e. 104,337 tonnes of CO₂ equivalent as opposed to 1,510,000 tonnes from 4 star regulations).

The regulation impact statement (RIS) lacked an analysis of the most recent research into industry costs. The Board relied on two studies commissioned by the Victorian Building Commission and the Australian Greenhouse Office, (both have advocated for 5 star) neglecting to undertake its own research. Industry data appears to have been ignored.

The residential sector is not a major source of energy use or greenhouse emissions. It accounts for only 11 per cent of final (end use) energy consumption vis-à-vis 39 per cent (transport), 21 per cent (manufacturing) and mining (15 per cent). The focus of energy regulation on the housing sector to date is inconsistent with the much greater gains possible elsewhere. The Productivity Commission has commented:

The current policy emphasis would only be justified if the marginal cost of abating greenhouse gas emissions is much lower for buildings than for other emission sources. There is no evidence that this is the case.

The claimed environmental benefits rest not on measured energy performance but on computer modelling of possible energy savings. The modelling focuses on just one aspect of energy efficiency – the thermal efficiency of buildings. It is assumed that the more effective insulation is, the less energy will be used to heat or cool the home. This is true as far as it goes but there is no research to show how actual energy consumption changes with improved thermal efficiency.

Experts point to what they call “feedback effects” which can change the cost and savings. “Rebound effects” occur when improved efficiency leads to individuals using some or even all of the energy “saved” for other uses. Efficiency can reduce the cost of heating or cooling, encouraging more use. The ABCB acknowledges that the most comprehensive national data on energy use is now twenty years old.

The exclusive focus on thermal efficiency therefore ignores consumer behaviour and is not supported by evidence of the likely impact on actual energy consumption. Research is underway in Tasmania to field test the predictions of the alternative computer modelling. Initial results may be available late in 2006.

The Productivity Commission calculated that 42 per cent of residential energy use is space heating and another 2 per cent is cooling. This amounts to about 5 per cent of final (end use) energy consumption. However, the largest single source of greenhouse gas emissions in the residential sector is water heating (28 per cent), with heating and cooling just 14 per cent.

The most optimistic estimate, provided by the Australian Greenhouse Office, is that by 2020 mandatory energy efficiency standards under the Building Code of Australia will contribute only 0.8 per cent to Australia’s greenhouse gas abatement, at a staggering cost of \$31.5 billion. Nearly all of this abatement will be achieved by existing 4 star regulations. 5 star regulations add significantly to cost but will have far less impact on emissions.

Cost

Regulators have consistently under-estimated the costs to be borne by home buyers.

The most extensive quantitative survey to date was conducted on behalf of the Victorian Building Commission and HIA in February 2005. 601 builders were surveyed on a range of issues relating to the introduction of 5 star energy regulations. Builders reported that 5 star energy regulations had added, on average, 6 per cent (c. \$15,000) to the cost of a new home. 32 per cent of builders estimated an impact of greater than 6 per cent, 19 per cent estimated an impact in the range of 6 to 10 per cent, while another 13 per cent estimated costs of 10 per cent or higher.

The Victorian Building Commission commissioned another study. The study was limited to nine volume builders who constructed at least 150 homes a year. Excluding smaller builders from the sample produced results unrepresentative of the industry as a whole. Firms building at least 150 homes a year account for just 30 per cent of the homes built in Australia. Moreover, volume builders are far better placed to absorb or reduce compliance costs due to economies of scale, efficient standardised construction techniques and designs, and the internal resources in the business to implement compliance strategies. Smaller businesses lack these advantages.

Regulators have used a range of discount rates to calculate the present value of future energy savings, compared to the immediate capital costs required to implement energy efficiency changes to the design and materials of a new home. The basis for choosing these specific rates has not been clearly explained. The Productivity Commission has been rightly sceptical of this approach, noting that the use of low discount rates may be appropriate for assessing cost effectiveness from a community wide perspective but is far more doubtful when assessing private cost effectiveness. It is erroneous for the BCA to use a cost/benefit test which includes the whole life of the structure when the accounting is only focusing on one aspect of energy efficiency.

The Board's 2002 regulation impact statement for the current standards predicted a net benefit of \$485m (benefit \$1,150m, cost \$665m) with a discount rate of 5 per cent. The ABCB's 2005 draft regulation impact statement for 5 star regulations predicted a net benefit of \$194m (benefit \$558m, cost \$364m), with a discount rate of 6 per cent. The 2002 Victorian (5 star) Regulatory Information Bulletin (not subject to the rigours of a full regulation impact statement) predicted a net benefit of \$52m (benefit \$159, cost \$107m) with a discount rate of only 4 per cent. In all these cases, a slight change to the discount rate would have eliminated the claimed net benefit. In a similar vein, the Victorian Building Commission calculated the energy savings over an unreasonably long period (i.e. 40 years) to inflate the private savings from 5 star regulations.

The Productivity Commission considered these reports and concluded that:

There is considerable uncertainty about the estimated potential savings, because the case studies use many questionable assumptions, including the:

- *criterion used to determine cost effectiveness (such as simple pay back period);*
- *use of a social discount rate rather than private discount rates that reflect the range of individuals' circumstances;*
- *level of business-as-usual improvements in energy efficiency;*
- *costs associated with energy efficiency improvements;*
- *extrapolation of audit and best practice study results to a whole sector; and*
- *Representativeness of simulated producers and consumers.*

New regulation can often have an impact on fundamental design criteria – known as a 'knock on effect'. In the case of 5 star regulations, for example, there is a need to increase material sizes (eg. ceiling joists, rafters and plasterboard) to accommodate more insulation. Heavier or more expensive materials may need to be substituted for lighter, cheaper materials (eg. 13mm plasterboard for 10mm thick plasterboard). Changes to wall and floor framing may be required. These costs can be substantial but do not appear to have been considered in the 2005 regulation impact statement.

There is also the impact in terms of restricting consumer choice and virtually eliminating the use of some building materials. Consumers will be denied the opportunity to select a

range of features and home designs. The strong bias against lightweight construction has been highlighted to governments by HIA and associated timber groups.