

# Submission to the Productivity Commission

*Associate Professor Craig Langston  
University of Technology, Sydney*

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Evidence from overseas suggests clearly that in order to improve industry performance it is necessary to set a framework within which the marketplace can be allowed to find its own solutions based on simple competitive advantage. However, this framework requires government intervention in the early stages to steer the various stakeholders in desired directions.

One of the major obstacles to implementation of assessment techniques and advanced construction solutions is making the motive for such action relevant to the speculative investor or developer. While it is possible to set up a framework within the public sector through policy change, the success of any action lies in its take up rate by the private sector. It is generally accepted that an incentive approach is preferred to a legislative one, but to be effective it must relate to all sectors of the industry and at all levels of investment.

The following recommendations are proposed as a method to achieve this framework within the short-term. While they focus on operational energy performance, in the longer term the inclusion of embodied energy will ensure that issues of maintenance, replacement and recycling are part of the decision process to arrive at efficient design solutions. However, the strength of the approach lies in the ability of the marketplace to view the recommendations as a means of improving financial return in property transactions through a changed consumer focus and a better understanding of energy performance and resource efficiency. It is therefore recommended to:

- 1. Establish a 5-Star energy rating system for all building projects (similar to the NatHERS methodology for residential buildings)**

Improvements in operational energy performance are a key factor in the reduction of greenhouse gas emissions. The star rating system has the advantage of being easily understood by the community, and in essence is little different to that presently used on whitegood products such as refrigerators and dishwashers. The rating system is best structured on a five point scale (5 stars equal excellent energy efficiency) in increments of half stars. While the calculations behind the end result may be complex, the simple presentation will enable tenants and purchasers of buildings to correctly interpret the impact of operating performance and, therefore, incorporate such information into their financial decisions.

**2. Ensure all building approvals are conditional upon achievement of at least 3-Star operational energy performance**

If improvements in building performance are to be realised, minimum standards of compliance are necessary. It is suggested that a 3-Star rating may be a suitable benchmark initially. This may be adjusted upwards in the future as government wishes to exercise more stringent control over development. The benchmark is a performance standard, not a design solution, and therefore it will encourage innovation in the industry to deliver the necessary performance at minimum total (life) cost.

**3. Amend the Building Code of Australia (BCA) to include achievement of a 3-Star energy rating as an essential minimum performance standard**

To be effective, this standard should apply to all classes of buildings (both new work and renovation). The BCA is the best vehicle to do this, and local councils will therefore have the responsibility to ensure compliance. Planning approval must be conditional on the minimum energy rating being achieved. The changes necessary to the BCA are quite minimal. It is vital that the rating system be applied nationwide.

**4. Develop tools to assist professional advisers to make and interrogate star rating calculations**

A common methodology needs to be developed to measure star ratings. The CSIRO are in the best position to do this, and it is important that the calculation approach used for commercial buildings is similar to that already in existence for residential buildings. Software tools can be used by professional advisers, contractors, individuals and local councils to assess designs and interrogate the results so that the best balance of performance and cost can be realised. These tools need to be made available in the marketplace at reasonable cost. In the future, automatic calculation linked to three dimensional CAD models will provide productivity improvements in practice.

**5. Provide research funding to assist development of benchmarks for assessing energy performance and star ratings in a range of environmental contexts**

Different climatic zones will give rise to different construction solutions, but the star rating system must be able to apply to all conditions in an equitable fashion. Further research is necessary to identify suitable benchmarks for various classes of buildings and to link them to the 5-Star scale. Factors that will impact on performance include orientation, aspect, glazing, thermal resistance, material selection, insulation, HVAC decisions, and the like. The calculations are complex and need to be suitably modelled by software if the approach is to work in practice.

**6. Launch a nationwide promotion and education campaign to encourage pursuit of and consumer demand for energy efficient solutions**

It is critical that an appropriate campaign of public information be launched to introduce the new requirements and to instill in consumers the importance of each star rating increment in terms of annual operating cost. Continuing professional education for client advisers is also necessary. In the longer term it is the marketplace itself that must drive the search for more efficient design solutions, and for this to occur consumers must be properly informed.

**7. Encourage existing building owners to use star ratings when advertising for tenants or purchasers**

Coupled with the nationwide promotion and education campaign, it is important to work with property agents to ensure that the energy performance rating is made clear to potential consumers. In much the same way as food needs to be clearly labelled, so too buildings must have compulsory energy labelling. In the short term this will apply to new or renovated buildings, but over time this will naturally spread to existing buildings. Market forces may encourage building owners to prematurely undertake energy classification to improve their ability to get the best market price.

**8. In the longer term, include embodied energy considerations in the calculation of star ratings**

Operational energy deals only with annual energy demands. The original construction process (including the whole chain of mining, manufacturing and delivering installed materials) also consumes energy that becomes embodied in the finished components and systems. In the same way, maintenance and replacement activities consume energy. Therefore a building that has low operational energy may achieve this at the expense of high embodied energy, and overall little may be gained if operational energy is considered in isolation. Total energy (embodied plus operating) is therefore a better basis for calculation of star ratings, but this level of sophistication will require greater research and development before it can be used in a practical sense.

In addition, for public projects the following recommendations should be implemented as a means of raising the profile of whole-of-life assessment and to encourage better decision-making processes during the design stage. It is expected that the systems that professional advisers will develop and use for public projects will also be used for private sector work. It is therefore recommended to:

**9. Introduce mandatory life-cost assessment into the design process of every new public sector project over \$5 million**

The public sector has a role to play in encouraging the construction industry to adopt better practices. In exactly the same way that Value Management (VM) was made mandatory for public projects in NSW over \$5 million, so life-cost assessment must follow. The experience from the United States where life-cost assessment is compulsory already is ample evidence of the need for government to lead and to set standards nationwide. This process will enable building performance to be further improved and encourage the development of new design solutions that maximise social benefit over a long time horizon. Governments are not only major clients for the industry but also long-term occupiers of space, and therefore market intervention of this type can make a significant difference.

**10. Merge capital and operating budgets for all government agencies**

The principle of life-cost assessment requires the ability to balance initial and recurrent expenditure to achieve the best result. In cases where capital budgets are isolated from maintenance budgets, the whole concept of life-cost assessment is pointless. Private sector clients have more flexibility to adjust to this practice than government agencies, and therefore it is a priority that policy be altered to enable holistic construction budgets to be introduced.

**11. Modify the National Public Works Conference (NPWC) Cost Control Manual to encompass a standard methodology for consideration of operating costs**

The NPWC Cost Control Manual is the recognised standard for cost planning in Australia. Although introduced initially for public projects, it has grown to be used commonly in the private sector since it was logical for professional advisers to develop systems that had universal application. Modification of this standard for inclusion of life-costs would greatly assist the introduction of a standard methodology for the industry. Actually, this work has already been completed, but currently lacks the authority to become the new standard. The NSW Department of Public Works and Services have been using the modified standard since 1991.

The above recommendations, if implemented, will lead to a significant improvement in the performance of the construction industry in Australia both in terms of the development of more efficient energy systems and the better utilisation of national resources.

I trust the above submission is of some use. Thank you for the opportunity to contribute to your study.