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AIRAH response to the draft National Building Energy Standard-Setting Assessment and Rating Framework



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About AIRAH

AIRAH is the recognised voice of the Australian air conditioning, refrigeration and heating industry. We aim to minimise the environmental footprint of our vital sector through communication, education and encouraging best practice.

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AIRAH response to the draft National Building Energy Standard-Setting Assessment and Rating Framework.

Should every rating tool used for regulatory purposes use a 10-star rating scale?

Rating tools need to be rational and promote the right behaviour in industry, i.e. the design, delivery and operation of better performing buildings. The number of stars used in the tool is largely a non-technical or communication aspect of the system. It is the performance level of the subject building that is of interest.

Current rating tools on the market (NABERS, Green Star) do not use a 10 star scale and AIRAH recommend that all rating tools, existing and future, should be consistent in their approach and use a similar rating scale, similar methodologies, similar metrics and similar defaults.

Having multiple tools containing multiple scales in the market will only serve to confuse the industry and reduce compliance and uptake. New tools need to be built on and compatible with the existing tools.

Should there be only one rating tool specified for compliance with building standards that require a minimum star rating?

AIRAH have a strong preference for a single rating tool for non-residential buildings and a separate rating tool for residential buildings. Combining the commercial and residential rating tools is not recommended or supported. It is noted that only the building fabric/envelope is currently rated in residential buildings while both the fabric and services are rated in commercial buildings. AIRAH are unsure of how a single rating tool could be used for both applications.

In the non-residential sector the rating tool needs to be fit for purpose for the design and construction of a building and for the operation of a building. The framework seems to largely skate over the issue of the fundamental differences between operational assessment and design assessment, particularly the differences in what parameters can be controlled and optimised cost effectively. The production of a single universal scale is unlikely to meet the needs of both phases of a buildings life. AIRAH suggest that an appropriate separation here would be potential (i.e. simulated) and actual (in operation) performance rating.

Whether a single tool can be developed to adequately address these two rating requirements is currently unclear. AIRAH support the alignment of rating methodology, metrics and defaults wherever possible.

Should residential building standards be harmonised across all jurisdictions?

While AIRAH is not deeply involved in the residential sector harmonising residential building standards across all jurisdictions seems to be a sensible approach.

Certainly in relation to the non-residential sector, state specific appendices in the NCC Volume One and the application of different versions of the NCC in different administrations/jurisdictions only serves to increase costs and confusion and reduce compliance levels in the industry and in the delivery of buildings. This is a common cause of frustration in the industry; that building standards are not harmonised across all jurisdictions. This was after all one of the original primary aims of the BCA/ABCB.

Could any changes to existing governance arrangements improve the development and administration of rating tools used under the Framework?

Yes. Industry needs to have full and unrestricted involvement in the governance structure. It is not good enough for government to dictate policy and offer snap shot consultations on draft policy documents. Industry needs to be engaged within the policy development process at the highest level. Industry will not fully embrace these challenges and changes unless industry feels it has ownership of the framework. Receiving policy dictates from government departments isolated from the commercial and practical realities of the construction industry only serves to alienate an industry that needs to be brought along on the energy efficiency journey not herded like cattle down particular regulatory paths.

For instance, AIRAH question the policy of continuing increased stringency in building energy efficiency standards while aspects such as commissioning, maintenance and high performance operation are largely ignored. In addition, the actual outcomes of the previous increases in stringency have not been quantified in terms of actual costs and benefits (and perverse outcomes). If we, government or industry, don't know how effective previous stringency increases are, on what basis can future stringency increases be designed?

Increasing NCC stringency appears to have been targeted as much for the convenience of the Australian commonwealth/state/territory government administration arrangements as for the benefits and costs of the policy approach. Had industry been involved in the development of this policy AIRAH is certain that the draft Framework would look very different at this point. Some thinking outside of current regulatory structures may be what is needed.

Government (COAG and DCCEE) needs to engage with industry early in the development of policy not simply present a draft policy for review and comment. This current approach is consultation by numbers rather than true collaboration. Industry wants to collaborate with government in the development of this important policy area. AIRAH would be willing to facilitate this process.

Do you agree the approach taken by Pitt & Sherry in determining the quantitative goals? What goals should be set for future energy efficiency standards in 2015 and 2020?

No, AIRAH do not agree with the approach taken by Pitt & Sherry in determining the quantitative goals. The Pitt & Sherry report is based on the assumption that BCA 2010 provisions are correct, appropriate and achievable in practice. AIRAH continue to question and disagree with that assumption. AIRAH are aware of considerable confusion and non compliance in the market with regard to BCA 2010 Section J provisions and this is two years after the introduction of those provisions.

AIRAH do not agree with many of the provisions of BCA 2010, the process/models that were used to develop and justify those provisions, or the regulatory impact statement (RIS) that was used to validate the provisions. AIRAH are of the opinion that the current RIS process overestimates benefits and under estimates real costs and therefore is canted towards overly optimistic and unrealistic cost/benefit outcomes.

AIRAH have made this position known to the ABCB since the publication of BCA 2010 and have attempted to actively engage with ABCB and BCC to make the BCA 2010 Section J provisions more practicable and hence achievable. However all proposals for change are required to meet a 'neutral stringency' test which means that any proposal needs to meet the theoretical 2010 performance level, even if that level is incorrect and unrealistic! Industry is continuing to experience significant compliance costs (JV3 and other) to manage out aspects of the NCC that are considered not fit for purpose. None of these compliance costs were included in the BCA 2010 RIS. The review process of new regulations/stringency steps needs to have a 'proper' RIS process and should allow industry to input our practical realities in regard to proposed changes. Current RIS processes should be reviewed

The goals for future energy efficiency standards in 2015 and 2020 can only be set when we, industry and government, have a firm and accurate understanding of the actual energy efficiency effects, and the real costs and benefits of the 2006, 2008 and 2010 energy efficiency standards.

Continuing to build policy on energy efficiency models, that have been based on other models and assumptions that have been based on other modelling and simplifications, without ever grounding the policy on actual data and real building energy efficiency results, is an inappropriate approach to standards setting.

The first step that needs to be taken is to establish:

1. The level of compliance with the 2006, 2008 and 2010 energy efficiency standards
2. The true costs of the 2006, 2008 and 2010 energy efficiency standards
3. The true benefits of the 2006, 2008 and 2010 energy efficiency standards

It is only when this research has been completed, data gathered and information analysed can any meaningful discussion on the future energy efficiency standards in 2015 and 2020 be entered into.

If the government continues building the framework, based on energy models, based on predictions and supported by assumptions and estimates you may as well pick values for X%, Y% and Z% out of the sky, which appears to be what this draft framework is advocating.

When delivering system or building energy efficiency or consumption improvements, AIRAH always recommends to benchmark a starting point, set project goals, and measure and monitor outcomes against the project goals. The draft framework would be significantly improved if it included commitments to:

- Benchmark where we are now, with real data;
- Decide what the outcome of the Framework is to be, in quantifiable terms;
- Put in place systems to measure that outcome; and
- Monitor results to ensure that policy is working and inform future improvement.

General/overall comments on the Draft National Building Energy Standard-Setting, Assessment and Rating Framework

Building energy efficiency or building related emissions.

The Framework does not recognise the role that improving energy efficiency standards can have in improving the overall performance of building as places to live and places to conduct business. In AIRAH's view it is important that buildings are primarily assessed and rated for energy efficiency.

Carbon footprint, GHG emissions and energy/fuel sourcing are important aspects of building operation but as the electricity grid changes and electricity generation and distribution becomes less carbon intense all of these aspects will also change. The carbon intensity of the grid now will be different from the carbon intensity of the grid in 2015, 2020 and beyond.

The carbon intensity of the grid is and should be the realm of the government. Rating buildings by carbon efficiency has and will create design solutions that have a "carbon life span". As the grid becomes less carbon intense these design solutions could lead to perverse outcomes such as increased, rather than decreased, carbon emissions.

AIRAH believe that building design and performance should be rated separately for each criterion and in the following hierarchy:

1. Energy efficiency – Mandatory for compliance purposes (e.g. NCC)
2. GHG/Carbon emissions – Mandatory for disclosure purposes (e.g. CBD)
3. Other criteria such as embodied energy or carbon offsetting – Voluntary for marketing purposes (e.g. Green Star)

There should be no trade-off, for mandatory (NCC) compliance rating purposes, between energy efficiency and any of the other rating criteria. The rating system should recognise and reward those that have designed and operate buildings for energy efficiency.

There should be no trade-off, for mandatory (NCC) compliance rating purposes, between minimum building fabric performance standards and any of the other rating criteria. Minimum, sound, practical, energy efficient performance standards for the building fabric/envelope should always be the baseline setting for energy efficiency standards. Non-tradeable, non-negotiable.

The most important rating over the long term is the actual energy efficiency of the building, and this rating should not be affected by energy sourcing. The energy efficiency rating is the criterion that should be mandatory and reported, other criteria can be voluntary or secondary.

Industry should be incentivised to provide high efficiency building services, appropriate low or zero emission energy sources and address embodied energy and carbon offsetting in the journey to zero carbon buildings.

Section 2 Overall objectives of the Framework (pp5)

1.1. Overall objective

The Framework states that “The overall objective of the Framework is to drive significant improvement in the sustainability of Australia’s new and existing building stock”.

While AIRAH fully support this objective it is important to know what the starting point is, (i.e. benchmark where we are now) and what success will look like (i.e. where we want to be in 2020).

Neither of these issues have been adequately addressed in the Framework, indeed these important questions have been totally sidestepped in the document. It is essential for industry engagement that we quantify (using real numbers and data) where we are now and where we need to get to. Non-quantifiable goals such as “driving significant improvements in sustainability” will not help industry help government achieve the required outcomes.

The framework needs to include measureable and achievable short (2015), medium (2020) and long-term (2025 and beyond) goals and a benchmark statement encompassing where we are at in 2012.

1.2. Building Types

AIRAH support the delineation between residential and non-residential buildings.

Will industrial buildings, cold stores and the like be included? More clarity is needed here.

AIRAH have primarily commented on those aspects of the draft framework that relate to non-residential buildings as these are the building types that most of our stakeholders deal with.

1.3. Projected climate changes

AIRAH are concerned that future NCC provisions are proposed to be based on ‘projected climate changes’. The specific local climate impacts of GHG climate forcing are still not well understood and remain predictions. AIRAH are of the opinion that basing building regulations and energy standards on climate temperature predictions contains some risk. If climate data is to be based on predictions should we not also be predicting future building services system efficiencies, future occupant behaviours, future building fabric performance, future carbon intensity of grid distributed electricity? Even the best predictions are just that educated guesses.

Buildings are designed based on the climate data of the location in which they are being constructed. The science on climate change indicates changes on a macro scale quite well but predicting the variances of micro-climate is NOT well proven. Predictions for the last 15 years have not matched actual weather observations and climate scientists are still working to improve the modelling science and the accuracy of local climate predictions. AIRAH strongly recommends that building designs be based on actual recorded weather data. Any mandatory provisions for projected climate changes could be accommodated by the application of design safety factors or the like.

Noting that building services and HVAC have a typical service life of 20 to 30 years in buildings that can have working lives in excess of 100 years, AIRAH suggest that building regulations and energy standards be based on the latest climate data and not on predicted future climate data.

Climate data

Climate data also needs to be updated in the design tools used by industry (e.g. AIRAH DA09, computerised load calculation programs). Updated and current climate data (to 2012) should be released to industry as a priority so that designers can use the most up to date data available. These updated weather files should include data from all years of recorded weather history, not just the last 30 years.

Guidance on how temperatures have changed over the last 20 years should also be provided. While this data cannot be used to predict how things will change it would give an indication of past changes.

It is also noted that climate data is also very “model” specific, i.e. one model might indicate that postcode 2850 should be 2°C warmer with less rain and another might indicate 3°C warmer with more rain. Climate data should be normalised across all models.

1.4. Occupant health

One of the overall objectives of the framework is to ensure “comfortable and safe conditions for building occupants”. AIRAH believe that occupant ‘health’ should also be added to this objective as health is different (although related) to comfort and safety.

1.5. Inclusion of sustainability elements

Water efficiency

AIRAH fully support the inclusion of water efficiency into the framework. AIRAH have carried out extensive work on the water efficiency of cooling towers and evaporative air coolers which could be used to inform water efficiency standards in this area.

AIRAH note the relationship between cooling tower water use and system energy use, i.e. the potential energy penalty when moving to air cooled alternatives and potential energy saving when moving from air cooled to water cooled systems. There will need to be some tradeoffs between water and energy and the framework should indicate a mechanism for dealing with these type of policy conflicts.

AIRAH also support moves to mandate the installation of water efficient appliances and fittings in buildings. Beyond that a building’s water consumption rating is largely dependent on the behaviour of tenants and occupants which cannot be the subject of mandatory regulation but could usefully be addressed through incentives.

Embodied energy

Calculating embodied energy is a very difficult and complex process. Embodied energy includes stationary energy (building materials) and manufacturing energy (constructing buildings). AIRAH notes that reductions in embodied energy have the potential to provide large opportunities for energy saving and this area should be progressed by DCCEE in the medium to long term.

Considerable research will be required to include embodied energy into minimum energy standards, including time to develop and trial the tools, and delivery of considerable education and training, to

assist industry apply them. If the long term goal of the Framework is to include embodied energy in building energy standards then this research and development work should commence now. The first step in this work would be to quantify the potential energy savings that could be achieved by addressing standards for embodied energy in buildings.

An important aspect of the embodied energy question is the embodied energy relationship between the demolition and reconstruction of a building and the refurbishment of a building. Each building would need to be considered individually but if a building refurbishment resulted in a significant reduction in embodied energy compared to a rebuild then this should be addressed within the framework.

1.6. Greenhouse gas (GHG) emissions

One of the direct GHG emissions caused by buildings relates to leakage rates of high global warming potential (GWP) refrigerants. The Framework has not mentioned or addressed this important area at all. AIRAH strongly believe that reducing refrigerant leakage and improving the standards for refrigerant containment should be addressed as part of the Framework. This is important for high GWP HFC refrigerants but also for low GWP refrigerants that have additional safety considerations.

With the push to low GWP refrigerants due to the HFC refrigerant carbon-equivalent price levy there are new health and safety design requirements to consider. For example, when putting ammonia chillers on buildings there will be local planning, environmental and workplace health and safety regulations to consider.

The building emission rating should also include direct emissions from any on-site power generation.

1.7. Operational energy efficiency improvements

The draft framework does nothing to drive improvements in existing buildings. AIRAH strongly believe that the HVAC HESS program should be advanced as part of the push to improve building operational energy efficiency.

Although the HVAC HESS program has been running for several years the implementation of individual projects within the program has been poorly managed and many important aspects of the strategy have not been progressed at all. AIRAH believe that the Framework should be better integrated with the HVAC HESS program.

Section 3 Coverage of Building Elements (pp 7)

1.8. Energy control systems

One of the building elements cited is 'energy control systems'. AIRAH believes this term needs to be defined. Are these proprietary energy management systems or does the term relate to any control system within a building that is used to manage energy?

Section 4 Regulation of new buildings and renovations (pp 8)

1.9. 4.1 Objectives – Measureable outcomes

The Framework is supposed to be outcomes based and aims ‘to achieve measurable outcomes relative to a defined baseline’. While AIRAH fully support this aim we do not feel that the Framework in its current form is achieving this.

The measurable outcomes of the BCA 2010 stringency increases have never been disclosed. How can the proposed 2015 stringency increases be developed if we don’t know how successful (or unsuccessful) the BCA 2010 stringency increases have been.

AIRAH recommends that detailed research into the measurable outcomes of the BCA 2010 stringency increases be carried out prior to proposing additional stringency increases. These outcomes should be measured as real and verifiable building data, not modelled virtual outcomes.

1.10.4.2 Treatment of building renovations

Applying new energy standards to building renovations will not always be possible. If complying with new energy standards/regulations becomes too hard or too expensive renovations will often not proceed (or be downsized to reduce compliance exposure) and existing buildings will continue to operate energy inefficiently. The current approach of the Framework may actually reduce the uptake of existing building energy efficiency upgrades.

Renovating or retrofitting existing buildings for energy efficiency needs to be incentivised and simply applying more stringent standards to renovation projects is more likely to act as a disincentive.

AIRAH strongly recommends that the “Tax breaks for green buildings” scheme be reinstated or a similar scheme introduced to incentivise and assist building owners to upgrade their existing buildings to make them more energy efficient. Such a scheme could be built into the framework or work independently of it and could be linked to higher stringency energy standards.

Building demolition

AIRAH note that the carbon footprint of a building demolition goes far beyond the embodied energy of the building elements. Although each building will be a specific individual case AIRAH suspects that in many cases building renovation and upgrade will have a smaller carbon footprint than building demolition and rebuild. Each building needs to be considered individually.

1.11.4.3 Pathway for increased stringency

Scheduled stringency steps (timing)

AIRAH strongly supports the concept of scheduling future stringency increases for the NCC (BCA Volume One and Two) so that industry is aware of when these will be implemented. This provides for certainty in the industry and optimises the opportunities for improved industry training, understanding and compliance.

Training and awareness of changes to NCC is an important point to consider. While the ABCB is able to produce communications summarising the changes to the NCC in a particular year these

communications relate to the technical change only and not any of the downstream or upstream changes in the building delivery supply chain. The training and awareness needs to be implemented in an integrated manner so that quantity surveyors, architects, buildings surveyors and designers/contractors are aware of the need for updated costings and other implications such as revised material schedules and updated design rules of thumb to account for secondary impacts on HVAC systems such as larger plantrooms, larger building shafts, deeper ceiling plenums, transport and storage logistics etc.

AIRAH suggests that the public comment/industry review process of the draft stringency increases should be extended beyond the normal ABCB public comment period to allow for full industry review and consideration of the proposals.

AIRAH note that the increased stringency approach is not new and that there will be diminishing energy efficiency benefits or returns from each stringency step. It is not just diminishing returns of financial investment it also diminishing returns on embodied energy investment – although the two are intrinsically linked.

Magnitude of stringency steps (scale)

“This draft Framework has not proposed specific goals. Stakeholder views are sought on what they believe would be appropriate 2015 and 2020 goals for minimum building energy efficiency standards.” This statement, taken from 4.3 of the framework, is not consistent with the NSEE requirement that the framework be outcomes based.

The Framework is supposed to be outcomes based and yet we are offered X%, Y% and Z% and the Framework requests (in a footnote) “Comment is sought on what numbers X, Y and Z should be”. This looks more like an industry ‘auction’ rather than a policy based on declared outcomes. The values of X and Y and Z need to be based on COAG declared and agreed building energy reduction outcomes, not simply figures negotiated with vested interests. If the whole framework is supposed to be outcomes based then why are these percentages not calculated based on the required outcomes?

These percentages also need to be informed by the energy efficiency outcomes of the BCA 2010 stringency increases. If DCCEE/EEWG/SCCC/ABCB do not know the actual outcomes achieved by the BCA 2010 stringency increases then consideration of any future stringency increases should be postponed until this information is known.

AIRAH recommends that the Framework be withdrawn until DCCEE/EEWG/SCCC have been able to quantify these X, Y and Z figures based on the required (and published) outcomes. Asking industry to choose or suggest these figures makes a mockery of this policy initiative.

1.12.4.4 Flexibility in Building standards

The stringency approach is not new and will only be able to deliver diminishing returns. AIRAH fully support flexibility in building standards and the framework needs to look at embodied energy aspects of building solutions as well as fabric and services. In addition the effect of thermal mass and the role that phase change materials can play in modifying building thermal performance should be accommodated within the framework.

Building fabric

AIRAH strongly recommend that minimum standards for the building fabric be retained within the NCC mandatory provisions.

There should be no trade-off, for mandatory (NCC) compliance rating purposes, between minimum building fabric performance standards and any of the other rating criteria. Minimum, sound, practical, energy efficient performance standards for the building fabric/envelope should always be the baseline setting for energy efficiency standards. Non-tradeable, non-negotiable.

Renewable or low-emissions energy

AIRAH fully support the inclusion of on-site renewable or low-emissions energy systems into buildings as long as the application is appropriate. AIRAH feel that the contribution of these systems to the performance of the building should only be recognised in the rating standards separately from the contribution of the building fabric and fixed services to the overall building energy efficiency. The contribution of on-site renewable or low-emissions energy systems to the overall building rating result needs to be differentiated in any rating scheme by listing it as a separate rating. This should also apply to near site and far site renewable or low-emissions energy generation systems also.

Anecdotal evidence exists that on-site renewable or low-emissions energy systems, such as cogeneration or trigeneration heat/power systems, are often applied inappropriately to building projects and are used less than optimally by building operators. The misapplication of these systems in some buildings has largely occurred in response to a desire to achieve a particular building rating result. Given that the performance of these systems and their contribution to a building's GHG emissions relies so much on their correct commissioning, operation, maintenance and tuning (all areas largely outside of the NCC remit) AIRAH strongly recommend that these systems should not be included in the base energy efficiency rating of the building.

Energy/carbon offsets

AIRAH fully support the inclusion of energy/carbon offsets into building projects in a voluntary context. AIRAH can see how offsets could be used to generate real zero emission buildings however the process needs to be voluntary (not mandatory) and grounded in the National Carbon Offset Standard (NCOS).

Energy/carbon offsets should be rated separately from the contribution of the building fabric and fixed services to the building energy efficiency, and the on-site renewable or low-emissions energy systems to the building GHG emissions. The contribution of energy/carbon offsets to the overall building performance rating result needs to be clearly differentiated in any rating scheme by listing it as a separate rating.

Complementarity and additionality

AIRAH are unsure of what these terms are intended to mean in the context of the draft framework.

Extreme hot and cold

AIRAH are unsure of what these terms are intended to mean in the context of the draft framework.

1.13.4.5 Maintenance of post occupancy building performance

HVAC High Efficiency Systems Strategy (HVAC HESS)

AIRAH fully support the HVAC High Efficiency Systems Strategy and believe that this program should be better/fully integrated into the draft Framework. Many of the proposed HVAC HESS elements such as the 'Calculating Cool' rating tool for building HVAC and the 'Building Services Log Book' are essential to building energy efficiency outcomes.

The cool efficiency 'Calculating Cool' project is intended to address separate heating and cooling performance requirements. This HVAC rating tool is also designed to mesh with NABERS and Green Star rating tools.

The 'Building Services Log Book' project is intended to address the chain of custody documentation through the full life cycle of a building and correct the current market failure with regards to building documentation and records.

These HVAC HESS projects are intended to close the loop between building designers, constructors, and operators creating a feedback loop which will help the industry learn how to model, build and operate better buildings with better services.

The Framework pays only passing mention to the HVAC HESS program and AIRAH strongly believe that this program should be progressed by DCCEE and integrated into the building Framework and building performance rating tools.

1.14. Inadequate commissioning and maintenance

The draft framework recognises in 4.5 that inadequate commissioning and maintenance will lead to poor operational efficiency outcomes. Inadequate commissioning and maintenance represent significant market failures in the building design/delivery/operation process and yet they have not been addressed at all in the draft Framework

Commissioning

Complete and integrated commissioning of a building and its associated services is absolutely essential for a building to deliver good energy performance outcomes. Even the best designs, the cleverest control system and most stringent energy standards will deliver poor energy outcomes if the building and systems have not been correctly commissioned.

The framework should include a policy to introduce mandatory building commissioning requirements, and a mechanism to demonstrate compliance, into the NCC to address this market failure.

Compliance

There are a range of issues around compliance with current building regulations. As the regulations become more complex (i.e. NCC V1 Section J) they need to be supported by increased industry training for designers, installers and certifiers. AIRAH have conducted research that shows a significant level of non-compliance in the building industry particularly for designers, installers and

certifiers that are ‘unconsciously non-compliant’ i.e. they are not aware of their non compliance because they are not fully aware of the new rules through lack of training/communications.

The Framework should include a provision for an independent evaluation of industry compliance (and non-compliance) with BCA Section J 2010 requirements across a range of building classifications, sizes and locations.

Maintenance

Maintenance for sustainability, maintenance for energy efficiency? The Framework makes no mention of the opportunities for improving maintenance standards leading to improved building operational efficiency.

Although BCA Section J includes requirements for the maintenance for energy efficiency AIRAH are not aware of any jurisdiction or building administration in Australia that currently enforces or assesses compliance with this requirement.

Contrast this with the approach to essential services maintenance.

The Framework should support the development of a ‘Maintenance for sustainability’ DTS proposal for inclusion into NCC Volume One and secure agreement through COAG that these provisions will be enforced in all state/territory jurisdictions.

Section 5 Assessment and rating of buildings (pp14)

1.15.5.1 Use of building ratings

The draft framework states that “The framework will seek to achieve convergence as far as is practicable in the assessment and rating methodologies for different building types and environmental categories over time”.

AIRAH strongly believe that the framework should contain a much stronger statement that assessment and rating methodologies for different building types will be aligned and harmonised, particularly the energy modelling protocols of ABCB, NABERS and Green Star. All new tools developed or revised under the Framework must be suitable for national use, contain no state/territory variations and must be aligned and harmonised with the other rating tools in use by industry.

AIRAH have been working hard to encourage the owners and administrators of the three main energy modelling protocols in use in Australia (namely ABCB, NABERS and GBCA) to actively pursue harmonisation of methodologies and defaults to reduce the level of modelling rework currently being undertaken in industry. After an encouraging start AIRAH have now handed over governance of this important project to DCCEE and feel that the project is under resourced and not receiving the priority it deserves. If the framework seeks “convergence” in rating systems surely this important harmonisation project could be better resourced and given a higher priority by the department?

1.16.5.2 Rating scales

AIRAH do not support the move to a ten star rating scale without being provided with the reasons as to why this move is an improvement. Any scale should be consistent and compatible with current tools on the market.

AIRAH believe that building design and performance should be rated separately for each criterion and in the following hierarchy:

1. Energy efficiency – Mandatory for compliance purposes (e.g. NCC); measures and rates the contribution of the building fabric and fixed services to the building energy efficiency.
2. GHG/Carbon emissions – Mandatory for disclosure purposes (e.g. CBD); Measures and rates the building's emissions including the contribution of on-site and near-site and far site renewable/low-emissions energy systems.
3. Other criteria such as embodied energy or carbon offsetting – Voluntary for marketing purposes (e.g. Green Star); Measures and rates the contribution of the energy/carbon offsets used in the building project.

1.17.5.3 Energy use/GHG emissions

AIRAH strongly believe that some mechanism for recording and reporting high GWP refrigerant leakage should be included in the Framework so that direct refrigerant emissions from a building can be counted in the overall GHG emission rating.

The building emission rating should also include direct emissions from any on-site power generation.

1.18.5.4 Enabling comparison of different buildings

1.19.5.4.1 Normalisation of building ratings

AIRAH understand the need to normalise data across building types, locations and ages. Normalisation matrices or calculations must be fully transparent; there should be no 'Black boxes' in the rating tools used under the framework. Normalisation matrices should be published and locked in and should not be 'tweaked' to suit government objectives.

The rating method for Class 1/2 buildings is vastly different to other classes. This must be addressed first before ratings can be normalised.

AIRAH believe that rating tools should be split into design and operational streams and that separate tools should be used for residential and non-residential buildings. Currently these building types are rated using different methodologies and criteria in regards to building fabric and building services and there are compelling reasons why this is so. The framework provides no reason why forcing a move to a 10 star system is an improvement.

1.20.5.4.2 Accounting for climate variation

The Framework contains the following statement: "The weather data in rating tools will be updated to more closely match future climate predictions over the expected life of buildings."

A commercial office block could be expected to have a 50 to 100 year life, while its services could be expected to have a 20 to 30 year service life. Given the uncertainties around climate change in response to human forcing how will this be achieved? The specific local climate impacts of GHG climate forcing are still not well understood and remain predictions. AIRAH are of the opinion that basing building regulations and energy standards on climate temperature predictions contains some risk. If climate data is to be based on predictions should we not also be predicting future building services system efficiencies, future occupant behaviours, future building fabric performance, future carbon intensity of grid distributed electricity? AIRAH suggest that building regulations and energy standards be based on the latest recorded climate data and not on future predictions.

1.21.5.4.3 Comparing new and existing buildings

AIRAH strongly support the move to consistent metrics and methodologies for rating new and existing buildings.

Section 6 Rating Schemes (PP 18)

1.22.6.1 Governance of rating schemes

AIRAH recommend that the governance of rating schemes be open and transparent, inclusive and consultative and that the final results be based on consensus between all stakeholders. It is important the government agency managing the process is able to bring industry along on this journey and not simply require compliance. The agency also needs to be robust in its ability to respond to industry feedback.

Industry must be adequately represented on both the steering committee and the technical advisory groups. Bringing industry along on this journey is an important element in the eventual success or failure of the framework.

1.23.6.2 Accreditation of rating tools

AIRAH believe that allowing the NCC to recognise the results of commercial building rating tools as a means of demonstrating compliance with the minimum energy standards is an important step and should be given higher importance within the framework.

Using multiple tools to demonstrate compliance with multiple government requirements (e.g. NCC, CBD etc) is inefficient and frustrating for industry.

1.24.6.3 Accreditation of Assessors

Setting minimum standards for qualifications, ongoing training and professional development of assessors and building professionals is an essential part of the framework.

AIRAH is well positioned to develop and deliver training and competency standards for accredited or licensed assessors subject to funding being made available to facilitate the work.

When accreditation is available, people will often see this as a business or career change opportunity. It is important that assessors have a background in the building and energy industries

and the pre-qualification requirements for assessors should be carefully considered. The pre-requisites for accreditation for energy modelling of a commercial office building would need to be significantly more stringent than what is currently required for either FirstRate or NABERS. The current requisites for training may not always be enforced.

One of the reported outcomes of the commercial building disclosure program was an influx of NABERS assessors to the market with considerable variations developing in the market on assessment price and quality.

1.25.6.4 Collection of ratings data

Data collection, analysis and publication are important aspects of the framework and will be required for ongoing evaluation of success. This data collection and analysis is essential if the framework is to be an evidenced based policy as it claims. There needs to be a standard developed for the format and content of the data and information collected.

HVAC HESS projects such as 'Calculating Cool' and 'Building Services Log Book' would go some way to standardising this data collection and these important policy initiatives should be better integrated into the Framework.

Data collection relating to the effects of the BCA 2010 stringency increases should have already started.

Section 7 Implementation of the Framework

1.26.7.1 Framework governance

AIRAH strongly support a national body managing the implementation of the framework. This body should be accessible to industry and be able to robustly respond to industry feedback and compliance problems as they arise.

1.27.7.2 Evaluation of the Framework

Evaluation of the framework is essential. The proposal to defer evaluation of the framework until 2017 (i.e. two years after implementation of the 2015 increases) is **strongly opposed** by AIRAH.

Monitoring and evaluation should have already commenced for the BCA 2010 stringency increases. If it has not it should be given the highest priority otherwise this policy of stringency increases cannot be supported by industry as the effectiveness are unknown and all future modelling becomes meaningless. Monitoring and evaluation of BCA 2008 and BCA 2006 should be complete at this stage. Where are the results of any monitoring of any of these stringency increases, how does industry know they are achieving the desired or any effect? Have there been any perverse outcomes from these increases. Does government know or even care? DCCEE has spent considerable time and money in developing this draft framework, how much time and money has been spent evaluating the effectiveness of these mandatory energy efficiency stringency measures?

Monitoring and evaluation should be continuous and ongoing. No proposals for BCA 2020 stringency increase should be implemented until the evaluation of the 2015 increases is complete. No proposals for BCA 2015 stringency increase should be implemented until the evaluation of the BCA 2010 increases is complete.

If the BCA 2010 stringency increases (and BCA 2008, BCA 2006) are not being evaluated and monitored then the Framework should be abandoned until such time as this information is known.

End of AIRAH response