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Industry Survey Report – NABERS rating tools

A joint industry – government initiative



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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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Executive summary

This document is a report that summarises the results of an industry survey and technical review of the NABERS scheme and rating tools facilitated by AIRAH on behalf of the NABERS stakeholder advisory committee. It collates all comments made; including specific issues industry practitioners have raised with the NABERS tools and suggested ways to fix the issue. The report also highlights strategic, technical and administrative priority issues for consideration during the NABERS strategic review.

Some of the priority issues identified in the report include strategic issues such as whether the tools should be emissions or efficiency based, stretch targets and incremental ratings for the star rating system, transparency in the development of benchmarks and normalisation factors, and the preference for streamlining the tools improving clarity and reducing complexity.

Some of the priority technical issues raised included methods to determine hours of occupancy, building, space and activity classification, the use and calibration of meters and sub meters, the treatment of data rooms in the tools and the methods specified for microbiological sampling and testing of the indoor air.

Some of the administrative issues raised include the level and quality of the technical support provided by the national administrator, the complexity and duplication of the lodgement process and perceived inadequacies of the NABERS Website.

The results of this survey indicate a strong commitment in industry to engage with NABERS to build a more streamlined and robust system. Industry has expressed a preference to work collaboratively with NABERS to improve the methodologies and outcomes of the scheme. Many respondents requested greater communication and improved opportunities for direct involvement in the development process. AIRAH strongly supports further dialogue and communication with industry on these issues.

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Industry Survey Report - NABERS Rating Tools

1. Survey summary

1.1. Introduction

This report is intended to form part of the NABERS strategic review of all rating tools, and to feed into the development of the new NABERS “mutli-use” tool. Not only are the report findings wide-ranging, they also provide specific suggestions for the particular issues identified.

Professionals working in the built environment industry require certainty around the NABERS ratings tools – for now, and for the coming years. And they want to understand the philosophy and analytical material that underpin the tools’ development. A way this can be facilitated is through the NABERS stakeholder advisory committee (SAC), which provides an avenue for industry to better engage with the NABERS development team, the administrators and NABERS national steering committee (NSC).

On behalf of the NABERS stakeholder advisory committee (SAC), AIRAH coordinated an independent technical review of the NABERS rating tools via an industry survey. Professionals operating in the building services, energy efficiency and building management industries provided feedback about their experiences with the application of the various NABERS rating tools. They also shared their concerns. It’s this information that provides the basis of the report.

1.2. Background

An industry survey was conducted in order to identify and understand what specific issues industry is encountering with the application of the various NABERS rating tools. Industry bodies participating in the survey and feedback process include Australian industry and professional associations, educational Institutions, as well as local, state and commonwealth government departments and agencies. A full list of the organisations that were invited to participate in the survey is provided in Appendix A of this report.

The membership base of these organisations represents a broad cross section of the building rating, building management, energy efficiency, HVAC and associated industries in all states and territories in Australia.

The survey was provided to industry in an online format open to the public. The survey was open for 6 weeks and closed on 14th December 2011. Respondents were provided with a link to an independent third party survey provider where the submissions were recorded and collated.

The NABERS survey asked the following questions:

- Do you have any issues with NABERS?
- What issue do you have with this tool?
- Is your issue specific to a particular location?
- What impact does this issue have?
- How do you think the issue could be addressed?

Survey respondents were given the opportunity to bring up multiple issues if required. Respondents were further asked:

- Do you have any other comments about NABERS?
- Do you want to receive information from OEHL about the NABERS strategic review?

1.3. Context of this report

Over one hundred written responses and submissions were recorded from the industry survey. Almost all of the comments were offered in a constructive and collaborative manner. Although the survey allowed respondents to remain anonymous over 95% of responses were identified and many respondents expressed an interest in receiving further information on the NABERS strategic review from the Office of Environment and Heritage (OEHL).

Note: The identity of individuals and organisations associated with any particular comment cannot be published because the online format of the survey provided only limited proof of identity and the identity of each respondent cannot be absolutely verified. AIRAH have no reason to believe however, that any of the declared identities were incorrect. A small proportion of respondents chose to remain anonymous.

The views contained in this report are the views put forward by the survey respondents and do not necessarily represent the views of AIRAH or the other industry bodies associated with the NABERS Survey. AIRAH strongly supports further dialogue and communication with industry on these issues.

1.4. Who responded, multiple perspectives

The survey asked respondents to identify the sector of the built environment industry that they were primarily involved in. Although respondents come from across a range of disciplines the responses could generally be broken down into the following categories:

- | | |
|---|-------------------|
| • Building services engineers/consultants/contractors | Approximately 50% |
| • Building owners and managers | Approximately 25% |
| • Energy professionals | Approximately 15% |
| • Others (education, legal, equipment supply) | Approximately 5% |
| • Anonymous submissions | Approximately 5% |

It is clear from the detailed nature of many of the comments received that the vast majority of respondents are industry practitioners that actually work with the NABERS tools.

1.5. General comments

The survey offered respondents the opportunity to add any general comment they would like to make about NABERS. It should be noted that the majority these comments were overwhelmingly positive in their response

to NABERS. Although many of the respondents had identified issues that they felt (sometimes strongly) were wrong or incorrect within the system, the majority of respondents expressed a great deal of respect and support for the NABERS tools.

There was also a strong commitment expressed by industry to engage with NABERS to build a stronger and more robust system. Many of the respondents expressed a preference to work collaboratively with NABERS to improve the methodologies and outcomes. Many requested greater communication and improved opportunities for direct involvement in the development process.

General comments have been listed by subject matter along with the technical or administrative issues in Sections 2 and 3 of this report as appropriate.

1.6. Specific comments

Comments of a specific nature have been split into several categories in this report. The majority of comments fell into one of the following categories

- Technical – issues relating to the technical specifics of the various NABERS tools.
- Strategic – issues relating to the strategic direction of NABERS objectives.
- Administrative – practical issues relating to the administration of the scheme.

This report has been broken into sections and then further broken down into subsections and topic areas.

Each comment represents an individual submission. Where multiple comment boxes have been listed under a single heading this means that several individual submissions were made by multiple stakeholders on this issue. It should be noted that although some of the comments could be listed under multiple topic areas, duplication of comment was mostly avoided.

1.7. Priority issues for NABERS review

The following issues attracted the most comments or interest from industry. These particular issues may be suitable for priority action or consideration during the NABERS strategic review. These priority issues have been separated into strategic, technical and administrative categories.

Strategic issues

Priority issues relating to the strategic direction of the NABERS scheme include the following.

Emissions or efficiency

There is a call for a review of the fundamental objectives of the scheme and whether it should be based on building energy efficiency or the emissions of the building. Part of this issue relates to energy shifting and the trend of using renewable energy and low emission on site generation strategies to improve rating outcomes. The concern here is that building inefficiencies may be masked in the rating result by energy sourcing strategies.

Star ratings

There is considerable interest in the future “stretch targets” for the star rating scheme and in formalising the method of determining fractional star performance. Industry certainly uses fractional ratings and it may be

time for NABERS to define how these should be calculated. There was also some suggestion that the final building rating result should also include emissions information.

Transparency

There is a strong call from industry for greater transparency in the scheme; communications routes need to be improved, a more formal system for managing rulings needs to be introduced and the rating calculation should be made public.

Streamlining

Streamlining was a term that was used by several commentators. There appears to be a general industry consensus that the NABERS is a good system but care needs to be taken to ensure that the rules do not get overcomplicated and that the requirements should be streamlined, simplified or made more flexible wherever possible, without compromising the objectives of the scheme.

Technical issues

By far the most technical comment was submitted on the NABERS Office energy tool although all NABERS tools attracted some level of comment. The most frequent technical issues brought up include the following.

Hours of occupancy

The issue of how NABERS Energy deals with hours of occupancy/operation and the position of occupancy surveys in determining the rated hours has been questioned. This issue, relating to how hours of occupancy are defined, needs to be reviewed and clarified.

Building, space and activity classification

The issue of how NABERS Energy classifies buildings, spaces and internal activities are also brought up repeatedly by industry. The rules need to be clarified in some areas and perhaps some flexibility introduced to improve the application of the tool.

Metering

The issue of thermal, electric and water metering and sub-metering came up repeatedly in the survey. Industry wants clarity in the rules and practicality in their application, including more flexibility for manual meter reading.

Tenant chilled water

There were several comment received on the tenant chilled water rule B2 and the treatment of supplementary systems. Industry is calling for clarity in these rules to improve the robustness and repeatability of the rating scheme.

Data/server rooms

A significant amount of comment was submitted in relation to the treatment of data/server/communications rooms in both base building and tenancy tools. Again industry is calling for clarity in these rules and some suggestions have been put forward to address this.

NABERS IE

Several submissions were concerned with testing and microbiological air sampling requirements contained in NABERS IE with requests that these protocols should be reviewed and updated in line with international practice.

Administrative issues

Issues that were raised specifically regarding the administration of the NABERS scheme included the following.

Technical support

Several respondents questioned the quality of the technical support being provided to assessors. This is certainly a priority issue that needs to be dealt with by the national administrator and there are some useful suggestions in the feedback received.

Lodgement process

Many respondents questioned the effectiveness of the lodgement process when applying for an official rating. The current process is unwieldy and appears to be causing some time wastage and general frustration. Again the national administrator could address this priority issue by updating the lodgement process and several useful suggestions are contained in the submissions in this regard.

NABERS Website

There were several comments and suggestions for improvements relating to the format and content of the NABERS website.

2. Technical issues raised

2.1. Introduction

This section of the report outlines all of the technical issues raised by respondent to the survey. Issues have been sorted into categories based on individual NABERS tools and further grouped into subject lists and tool name where known.

2.2. General comments received on NABERS

Several respondents to the survey took the opportunity to submit general comments on the NABERS scheme. The following general comments on NABERS were received.

General comments received on NABERS
All in all a very useful rating tool; NABERS provides a credible result that is clear and comparable. A few minor changes (only) would help improve energy efficiencies within buildings.
Excellent tools. Once project managers and designers understand that the 'she'll be right' attitude and fobbing off of design elements to contractors will not deliver high performance buildings, the building industry will improve substantially. The failure in 'attention to detail' is often the source of cost and time over-runs.
I think it is a useful tool to use and certainly in my experience have not had any issues with its use. I have predominately been using the NABERS Office tools and found them very easy and simple to use.
NABERS is a program that is very applicable in terms of energy efficiency assessment and much more work can be done to improve the program to meet energy efficiency targets as well as greenhouse gas emission reduction. There are a few similar programs on the market and I wish the agency would consult with other program designers.
As a regular Assessor and also Supervisor and Trainer, I'm a strong supporter of NABERS and believe its uptake even before Commercial Building Disclosure shows its increasing acceptance. Having said that it is important the Rules keep up with the times, so reviews like this definitely have value, particularly for more strategic issues rather than small technical ones.
NABERS? I love it!
Well established tools with good market acceptance. Needs to continue to refine/define it to remove ambiguity and inconsistencies.
Excellent system. Very glad to have it. Need to focus on keeping it streamlined. It is meant to be fast and effective, over time more and more clauses being added. Will need someone to take stock periodically with intention to streamline.
The introduction of Mandatory Disclosure is resulting in a large increase in ratings. The strategic review needs to look closely at the extent that the rating process can be streamlined whilst maintaining its credibility.
Love it, really, really important, but needs some care, industry is willing.
NABERS is otherwise an excellent system which has achieved great results. There are loopholes that are being exploited by unscrupulous designers and needs to be plugged.
Overall I believe NABERS to be a useful rating tool with a high-level of rigour applied in its methodology.
NABERS is a very important part of the shift in thinking about resource efficiency and GHG emission reduction. It may never be perfect, but no benchmarking system ever will be.
Logically development/enhancement of the tool has been focused on NABERS Energy for offices due to the link to mandatory disclosure legislation, but adequate support should be given to the other tools (i.e. retail) so these don't lag behind.
I think there are a lot of issues with the NABERS program especially considering that some parts of it have become legislation.
NABERS should be used in all building classifications
Good concept, just need wider / more people using it

2.3. Specific technical issues

The specific technical issues highlighted in the survey are listed under the following headings:

- NABERS All/Multiple tools – Comments and issues relating to NABERS generally
- NABERS Energy – Further categorised into; benchmarking, general application, building/space types, occupancy and activities, systems, and data rooms.
- NABERS Energy - Commitment agreements
- NABERS Retail
- NABERS Hotels
- NABERS Water
- NABERS Indoor Environment (IE)
- NABERS Waste
- NABERS Data Centres – Tool in development

2.4. NABERS - All/Multiple tools

The following issues were identified for all or multiple NABERS tools.

Application to all buildings/small assets

Issue raised	It is simply not easy to rate every building the same way the structure allows. We have issues almost with every building, particularly smaller suburban or regional locations.
Suggested fix	Ideally a more flexible approach which can be easily grappled by one size not fitting all.
Comment	Extreme annoyance and frustration with current situation.
Comment	Reduced ratings or inability to get ratings.

Comment	Great idea, but the mandate is a problem for smaller assets in the regions. Little is clearly understood and where a building does not fit the 'box' you have a lot of problems, little ability to maintain any degree of flexibility, little control and a great load of frustration. Great concept, but in practice not great for smaller assets. Large assets it works well.
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Reverse calculators

Issue raised	No reverse calculators readily available for all tools.
Suggested fix	Make reverse calculators available for all tools.
Comment	Some already provided but need to be requested

Rating expiry dates

Issue raised	All NABERS Rating Tools - For about 18 months now a rating has a specific expiry date (previously this was a month). When a renewal rating is completed the new expiry date is then set to the date that the rating was validated. Mandatory Disclosure legislation has meant that property owners have to be careful to not allow a rating to expire. In effect this means that the re-rating is completed prior to the expiry of the current one, meaning that the expiry dates creep backwards over time.
Suggested fix	A re-rating submitted within +/- 4 weeks of an existing rating should have the rating date set to the anniversary of the existing rating date, not the date that the rating is validated.
Comment	Current arrangements mean that in effect a rating does not stay valid for twelve months.

Stretch targets

Issue raised	NABERS energy and water - Should go to 7 stars. 7 stars being carbon or water neutral from onsite sources.
Suggested fix	If you make NABERS go to 7 stars and this is carbon or water neutral from onsite sources then you have set the end game. You can have companies that target the highest star, just for the sake of it, but this will stop that unrealistic aim as they will know that the 7 star is extremely difficult. Make it a 7 star rating system.
Comment	Industry is not aware where the next star will go; will it be a half of 6 stars? What stretch targets to set.

Issue raised	NABERS Energy - All Does not provide adequate ratings for buildings that are significantly more energy efficiency than a 5 star rating. (Although scale has recently been extended to 6 stars).
Suggested fix	Expand the star rating scale to 7 or 8 stars.
Comment	Insufficient driver for organisations to improve performance above 5 stars.
Comment	We do not know if the rating will pass until we know which level 1 auditor receives our rating application.

Star increments

Issue raised	Incremental increases in building performance are not rewarded under current full or half star rating, a 0.25 star improvement should be acknowledged.
Suggested fix	Introduce .25 star increments.
Comment	Current system does not encourage incremental improvement. We all know this is how it works, sometimes over long periods.

Fractional positions between star rating thresholds

Issue raised	For those of us working with the tool as a key professional tool, it is essential to be able to understand the position of a rating between the official rating thresholds. This has become progressively more difficult with upgrades of the NABERS calculator which have, if anything moved to make it harder to determine.
Suggested fix	The rating calculator needs to be updated to include a calculation of fractional rating to 2 decimal places (or at least 1.5 decimal places) to provide a consistent and unambiguous basis

	for comparison. This figure should not be published on the rating certificate, but should be available from the calculator to provide a common language for tracking and monitoring purposes.
Comment	It is a significant waste of time for us and a significant confusing factor for industry, as there are several methods used to determine and express fractional positions between rating thresholds and these don't always align. This problem is significantly worse since the introduction of the 6 star rating as it means that the slope is not constant. We also have the ongoing confusing mythology in the industry that the decimal rating is the same as the calculated number from which the star rating is derived, when these are of course half a star different - a confusion which to some extent seems to exist at OEH, too. The need to understand fractional ratings is a critical one for any organisation that tracks the performance of its buildings over time - which is a good deal of the industry. It is also absolutely essential in the interpretation of simulation results for commitment agreements.

Comment	A refinement to calculation tool to allow nomination of actual point score within star bands for more precise reporting and monitoring of property assets. i.e. a 4.8 (4 star) result would hopefully provide a building owner with more incentive to reach 5 star at next opportunity
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Building materials

Issue raised	No NABERS material credits to assess sustainability of the final structure. As the 'as occupied' building tool, NABERS is in a position to ensure that materials specifications are adhered to by the contractors. Currently inappropriate materials substitutions are rife.
Suggested fix	Introduce materials credits with life cycle assessment basis and physical verification required at certification.
Comment	Deteriorates green building quality and value.

Thermal metering, electrical sub metering

Issue raised	No specific issue with the tool or what it is trying to achieve. What I have come across is a lack of knowledge - therefore referenced resources - in how to apply thermal metering and sub-metering. Specific technical references that include schematics would be appreciated by the industry. Skills shortages are a major issue. Almost no competent programmers of smart meters in the NT.
Suggested fix	The cross-discipline techniques and schematics required to conduct effective sub (electrical) and thermal metering. Far too many projects result in variations due to failure in design.
Comment	Leads too excessive costs, poor monitoring, billing issues, poor evaluation. Most recently on a building with NABERS commitments, the electrical spec did not match the hot water electrical requirements (hydraulic spec). Same building requires complete rewiring of boards for all air conditioning. Brand new building.

Issue raised	Difficulty with thermal metering, for NABERS Office Energy and Water.
Suggested fix	Review of thermal metering protocol.

Meter accuracy

Issue raised	Accuracy of meters is no longer nominated.
Suggested fix	Nominate accuracy of meters.
Comment	Possible to have inefficient meters, which is probably not what the NABERS team wants? Confusion when it comes to validation.

Meter validation

Issue raised	Office Energy / Water The requirement for validation of gas and water meters linked to a RMRS is currently impossible to justify and fulfil as there are no agencies willing to validate the equipment. Gas services must be shut down for validation (impossible in working environments) and no water manufacturer will confirm the accuracy of a meter after periods of time in use.
Suggested fix	Review the concept of meter validation across these meters.
Comment	Currently we need to avoid use of any equipment in this category, or bluff our way through ratings.

Manual meter reading

Issue raised	All tools Gas and water manual readings. Currently retailers only need to provide accurate readings twice per year. This does not suit NABERS. We use manual readings to obtain up to date data. The Rules that NABERS use seem to vary depending on the auditor and a new ruling that must be complied with..... however it has not been released yet.
Suggested fix	An official ruling - however with the input of actual NABERS assessors who are completing the ratings that have an understanding of real life data situations.

Occupancy surveys

Issue raised	All tools - Definition of occupancy surveys Inconsistency in interpretation leading to inconsistency in ratings.
Suggested fix	Clearer definitions should be provided.
Comment	Inconsistency in interpretation leading to inconsistency in ratings.

Outdoor air control

Issue raised	Whole building - Office, Industrial, Shopping centres - Queensland Outdoor air quantities especially with humidity as we get of north easterly winds and variances with people movement in Airports. CO ₂ monitoring with high ceilings especially in airports as it would be lucky if monitoring is effective.
Suggested fix	Presently we are having adjustable outside air control for people in transient for CO ₂ and reduced outside air control. NABERS Tools should accommodate and recognise this control strategy.
Comment	NABERS should establish a rating tool for airports.

NABERS and Green Star

Issue raised	Should be a comparative assessment between Green Star and NABERS
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Suggested fix	Have a comparison value E.G. if you have a Green Star rating of..?.. It should be equal to a NABERS rating of..?.
Comment	These ratings affect lease and property value

2.5. NABERS Energy – Benchmarking

Energy intensity/Energy efficiency

Issue raised	The NABERS Energy tool only focuses on carbon as a metrics. There should be also a focus on energy intensity and how we can incorporate that into current practice. There is an issue with energy shifting. A lot of work in the market is currently based on shifting the energy from grid electricity to gas. Whilst the emissions are lower, the dependency on fossil fuels is still there.
Suggested fix	There is an opportunity to drive energy and greenhouse gas reductions significantly. There needs to be some incentive built into the NABERS rating to reward energy intensity that is resulted from pure energy efficiency rather than energy shifting.
Comment	NABERS Energy has been used as a carbon accounting tool. - Emphasis is only on greenhouse gas emission reduction and not necessarily on energy efficiency. – This leads to energy shifting as opposed to energy efficiency.

Issue raised	Star rating is based on fuel source, rather than energy efficiency.
Suggested fix	Carbon emissions can still be reported, but star rating should be based on energy use of the building, and not on the emission intensity of the source fuel.
Comment	Brown coal source of primary fuel (in Victoria) should have no influence on the energy performance of the building

Issue raised	NABERS energy is emissions based rather than energy efficiency based
Suggested fix	Revert to a purer energy efficiency tool as the base measure. Deal with energy sources as a secondary test, similar to current treatment of Green power.
Comment	Currently tools encourage co- and tri-gen, which may not be the most overall efficient outcome, i.e. lots of small generators, rather than one large generator, increases inner city pollution levels rather than locating them away from population sources. Penalises Victorian buildings using electricity centrally generated, but not gas used at the site, so increases push to localised gas based energy production

Comment	NABERS needs to strongly consider whether it wants to remain carbon efficiency or energy efficiency focused. At present, we could have a highly energy efficient building, and a less energy efficient building with a co-gen system attached to it rating at the same level.
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Comment	Given the rise in on-site generation (co/tri-gen, solar, wind etc.) and off-site renewables we are muddying the water by remaining focused on emissions. We shouldn't ignore emissions but perhaps a better outcome for the industry is to focus on energy efficiency as the central tenet of the tool and report emissions only.
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Format and benchmarks

Issue raised	NABERS Energy for Offices - Base/whole building The tool is in an outdated format that needs to be aligned with the format of all the other tools, i.e. site-adapted benchmarks rather than normalised emissions. This will enable integration of the tool into a multi-type building benchmark and will also enable better resolution of existing normalisation work-arounds in high star rating regions.
Suggested fix	I think what is required is a first principles re-benchmarking and redevelopment of the system. This needs to commence with a data collection/collation exercise based on modern data to enable review of benchmarks. This can then be integrated into a single national benchmark with state variants based solely on greenhouse coefficients and climate zones rather than the current system of separate state benchmarks.
Comment	The existing tool is getting very dog-eared and has been patched up a little too often - not surprising for a tool of its age. As a result it is beginning to seem a little ad-hoc in the methodology department. A return to a simpler and more fundamentally appropriate approach will remove the patches. The most obvious problem here is the lack of consistency in benchmarks across state boundaries.

Issue raised	NABERS Energy - tenancy / whole building The tenancy tool benchmark needs to be re-evaluated. With the increase in energy efficiency of new computers and office equipment, the market seems to have moved quite significantly.
Suggested fix	A review of the benchmarks will provide the industry with better understanding of how their tenancy/whole building rates compared to others. This will drive new energy efficiency and lead to the industry constantly aiming to improve.
Comment	NABERS Energy for whole buildings and tenancies is shifting the star ratings quite significantly. It can be argued that the average 2.5 Star does not apply anymore and the market has moved on quite significantly.

Issue raised	NABERS Energy for offices – tenancy Benchmarks are inconsistent from state to state.
Suggested fix	Single set of consistent tenancy rating bands needs to be developed in coordination with redevelopment of base building/whole building tools.
Comment	Tenancy ratings for identical tenancies vary by as much as 2 stars.

Comment	Please publish the latest benchmarks for the new 5.5 to 6 star rating scheme.
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Transparency and normalisation

Issue raised	The NABERS Energy tool has never been released to the industry to understand how it is calculated and how the variables actually impact a building.
Suggested fix	Absolute transparency is required such that building owners/facility managers/consultants can inform themselves of the best way to improve their NABERS ratings.
Comment	Without the available knowledge and transparency building owners and consultants are committing to building upgrades to meet desired NABERS ratings. This may have issues in terms of over commitment/under commitment. Furthermore it does not assist the rating going forward as there will be assumptions made by each consultant that cannot be verified.

Issue raised	The calculation scheme needs to be more transparent such that the industry can understand the rating system and work towards increasing their sustainable aspirations.
Suggested fix	More transparency is needed for the industry. The rating calculation should be made public. A review of the calculation should be made to understand whether the assumptions made are still relevant.
Comment	Lack of transparency will lead to a less informed user/building owner.

Issue raised	Needs to be completely transparent. Conversion of energy factors from state to state need detailed explanation as to why the differences.
Suggested fix	Releasing the relevant calculations and decision making process that occurred in order to develop the tool to current state.
Comment	Lack of transparency leads to a lack of trust in the tools.

Issue raised	NABERS Energy for Offices - Tasmania Lower figure utilised for CO ₂ within Tasmania significantly hampers the performance of buildings in Tasmania compared to the rest of the country, at times, a mainland location can be emitting 3 times the carbon equivalent and get a better rating than an equivalent building in Tasmania.
Suggested fix	Use standardised carbon outputs, not adjusted to suit the bigger States.
Comment	Makes Tasmanian Buildings look less efficient than other areas.

Issue raised	NABERS energy for offices - base bldg. I think this is a simple though robust way to provide ratings for building. I would like to see more transparency on the methods used to normalise ratings.
Suggested fix	Provide more transparency on the methods used to normalise ratings.
Comment	Would provide clarity for assessors.

Issue raised	The rating has recently been extended to 5.5 & 6 stars. However above 5 stars the rating result does not state the benchmarking factor as above 5 stars the rating is now determined based on the percentage reduction of emission from the 5 star building. These emissions figures are not available.
Suggested fix	If the emissions that the building would produce at 5 stars was provided in the "For NABERS assessors" section of the rating result this could be used to determine the percentage reduction from the 5 star rating.
Comment	Not having these emissions figures means that it is not possible to determine how close a building is to the next star rating band. It also makes it much more difficult to determine what improvements could be made which would improve the building up to the next rating band.

Issue raised	NABERS not consistent across the nation - The basis of the NABERS rating is not transparent
Suggested fix	NABERS transparency - Conversion of energy factors from state to state need detailed explanation.

GHG emissions

Issue raised	Star Ratings give little information to a prospective tenant about likely GHG emissions or energy costs.
Suggested fix	There needs to be a web-based translation tool that converts the Star Rating back into GHG emissions and energy cost (demand and energy at a typical tariff).
Comment	Prospective tenants cannot extract useful information from the Star Rating like GHG emissions and energy costs.

Maximum demand

Issue raised	There is no accounting for maximum demand in the rating, which can be a major part of power costs.
Suggested fix	The Star Rating could be translated into Energy and Demand-related dollars (ballpark numbers at a nominated tariff) so that expected energy costs could be predicted in the new location by a prospective tenant.
Comment	Prospective tenants need to know if the previous tenant were wasteful or frugal and if there was active demand management or a free-for-all approach to maximum demand.

Green power

Issue raised	Purchase of excessive % of Green Energy can distort NABERS rating.
Suggested fix	Introduce a 3 year sliding scale limit (20% - 15% - 10%) to the amount of Green Energy, with the proviso that the sliding scale could be negated by an owner's proven Capital expenditure on energy/water/waste sustainability projects.
Comment	The purchase of a large percentage of Green Energy can be used as cheaper economic tool for building owners to achieve a better NABERS rating rather than commitment to actual capital improvements to improve the sustainability of their buildings.

Sliding scale

Issue raised	NABERS office used to have a sliding scale that indicated where your building fell in the scale and showed the relative benchmarks for adjacent star levels that enabled easy analysis of what a building owner could do to improve their rating
Suggested fix	Add back in the scale
Comment	Reduced opportunity to inform clients of how much effort required to improve a building facility

Metrics

Issue raised	<p>The current metrics is based on real estate terms that don't evaluate a holistic sustainability approach.</p> <p>The base building tool does not allow for any allowance when it comes to the size of the tenancies. This has led to the tool being used as a divider between tenants and base building owners. There are now restrictions on tenants for the number of staff/m² that are allowed. This means that dense tenancies need to invest in getting more buildings built leading to a higher embodied energy use.</p>
Suggested fix	A review of the impact of tenancy size on the base building NABERS rating is needed. This needs to be accounted for in the rating to provide a level benchmark and lead to a more holistic approach.

Whole building/Base building ratings

Issue raised	There is no correlation between whole building and base building ratings. The two ratings simply do not relate - doing a rating on base building and then on whole building due to a minor infraction of the Rules causes a significant difference in the published star rating that then has to be used in public advertising.
Suggested fix	Revise the whole building tool to better reflect the base building rating.

2.6. NABERS Energy – General application

Scope of assessment

Issue raised	<p>Not enough examples when it comes to defining the scope.</p> <p>There's a great deal of confusion when it comes to establishing the proper spatial/time/coverage of the assessment.</p>
Suggested fix	I would prefer if the manual had more examples for each type of exclusions/inclusions to assist with clearly defining the scope of the assessment and not have any grey areas.

Required documentation

Issue raised	<p>NABERS energy for offices.</p> <p>The documentation requirements for the tool are unclear. The checklist of 'information' and sections in the Rules on "Documentation Required" is vague. For example it is common that for a Base Building rating, every tenant and base building electrical distribution board must be inspected and photographed to ensure that the systems connected to these boards are connected correctly. In addition it is often necessary to obtain schematics of the tenant heating hot water and chilled water loops/systems and a schedule of all supplementary systems and the areas they serve, to justify their inclusion/exclusion in the rating. This is not reflected in the checklist provided in the Rules and it should be.</p>
Suggested fix	A detailed and complete checklist of required information should be included in the Rules, with simple prompts to ensure the assessor knows when to ask for the information. The assessor should be able to be very confident that once they have obtained all of the information on the checklist, they will be able to submit the rating with no issues.
Comment	Currently accredited assessors gradually learn what is ACTUALLY required for a NABERS rating, often via trial and error and under instruction during the supervised ratings. Often this leads to several site inspections being required, and multiple requests for information to the

	client.
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Ambient temperature

Issue raised	Although NABERS takes into account different climate zones, it doesn't take into account the fact that temperature varies each year. For example, for a given location, the ambient temperature (a major factor in commercial building energy use) varies each year.
Suggested fix	The ratings could be normalised for ambient temperature not just climate zone
Comment	If the rating period includes a hot summer then a building may receive a worse rating that it would if it was a cool summer.

Information and communication technology (ICT)

Issue raised	Whole building Differentiation of energy use and carbon output of ICT within offices tenancies and buildings. Imprecise calculation method for computers.
Suggested fix	Measurement by precise equipment monitoring technology.
Comment	Inability to quantify and measure carbon of ICT and monitor carbon effect on IEQ. 8 billion computers now to grow to 20 billion by 2020.

Previous tenant history

Issue raised	Landlords and building owners get penalised for the poor energy efficiency of previous tenants. There may need to be some general explanation about how the previous tenant used the space: occupancy, thermostat settings, maintenance issues, light levels etc. so that a prospective future tenant can gauge the relative strength of the Star Rating to their proposed use. Otherwise the Star Rating will be of little use to a future tenant - it won't indicate more or less energy consumption for their proposed use.
Suggested fix	Include a general explanation about how the (previous) tenant used the space in the rating report.
Comment	Landlords are not able to change the history of a previous wasteful tenant but also gain from the energy efficiency (higher Star Rating) of a frugal tenant.

2.7. NABERS Energy – Building types/Space types

Old/heritage buildings

Issue raised	NABERS Office - Whole Building Non-practical minimum functional space requirement for old/heritage buildings, where you have multiple physically separated areas due to the building structure, but do not meet the minimum functional space requirements.
Suggested fix	Review minimum functional space requirements for old/heritage buildings.
Comment	Old/heritage buildings sometimes difficult to comply.

Owner occupied buildings

Issue raised	Net lettable area is an issue when the whole building is owner occupied.
Suggested fix	Have standard ratings/energy consumption for different areas so they can be excluded from the calculations.
Comment	Sub meters need to be installed so like comparisons can be made with appropriate ratings.

Site inspections/as-installed data

Issue raised	The tool is not clear on how to deal with large sites with multiple buildings sharing common facilities such as basement carparks or large mixed use buildings. There also does not seem to be an easy way to deal with older sites where circuits are not clearly labelled and as built information is typically missing so it becomes difficult to determine what services are connected where.
Suggested fix	Raising industry awareness about the importance of As Built information and how services are required to be connected, regardless of leasing provisions.
Comment	It can make the site inspection process take a very long time as buildings have to be surveyed to determine what equipment is connected to which switchboard

Multi-use office buildings

Issue raised	The NABERS energy for office tool clearly states that the tool is for office buildings. The term office is clearly defined. However, the rating tool does not appear to specifically state the how much of a building's NLA needs to be used as "office" in order to qualify for an accredited rating under the NABERS energy for office tool.
Suggested fix	Provide a clear percentage and ruling of a building's NLA or total area that will need to be used as office space in order to allow an accredited base building rating using NABERS energy for offices.
Comment	It is currently not clear if a mixed-use building that may have a large component of commercial office space but still accommodates a reasonable percentage of retail, residential or public space use can be rated under the NABERS Energy for Offices tool.

Permitted space types

Issue raised	With CBD, NABERS has gone from being voluntary to mandatory, and I think that this makes it important that the tool aims for maximum flexibility in application. To this end I think it is important that the rules around the definition of allowable space-type inclusions are reviewed; after all we have allowed education and medical facilities, in limited quantities, to be included, so why not childcare (which I could argue is an education facility) and possibly some others in a similar low load vein?
Suggested fix	A review needs to be undertaken of a range of generally low load tenancy types, and their potential impact in biasing the NABERS Base Building rating determined. I note that when this was done for the issue of vacancy the simulations indicated that the issue of vacancy made very little difference to energy use for a base building system once the decision has been made to run rather than not run. By inference therefore, for a wide range of applications with loads between normal office loads and zero, the impact on the base building rating is also going to be very small.
Comment	Permitting a wider range of space types to be rateable - with suitable limits - would reduce the number of people making bad design decisions to achieve rateability ahead of common sense. It would also increase the number of immediately rateable buildings

Foyers and premium grade buildings

Issue raised	NABERS energy for offices - base building Premium office buildings are at a significant disadvantage because of extensive foyer space etc. B grade offices have limited foyer space which benefits the rating significantly.
Suggested fix	Introduce concessions for foyer space over a certain m ² .
Comment	Premium office spaces are at a disadvantage even though the buildings systems may be very efficient.

Corridor treatment

Issue raised	NABERS energy for whole building - Corridor square metre area measurement not included
Suggested fix	Include all common area corridors.
Comment	Distorts the amount of "Common Area" used in calculations; note that Corridor Common Area(s) electrical lighting is included in the Energy bills for the building.

Tenant toilets

Issue raised	Office Base Building - non-office spaces - tenant toilets Exclusion of tenant toilets from NABERS area requires non-industry standard area calculations to be completed for the assessment increasing cost and time for no obvious benefit.
Suggested fix	While not air conditioned specifically, toilets are exhausted typically via an extension to the base building system. Any reduction in air conditioning loads for a 15m ² toilet and shower combo is minor and may be offset by increased toilet exhaust fan energy. It is hard to imagine that tenant toilets generate an impact on base building energy any different to tenant storage cupboards, kitchenettes or compactus.

2.8. NABERS Energy – Occupancy and activities

Building vacancies

Issue raised	NABERS Energy for Offices - The massive penalty that comes from building vacancy rates.
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	NABERS ratings change from year to year, there is no real comparison between buildings, and the vacancy penalty causes a building to be less attractive in the market resulting in less attractive leasees.
Suggested fix	Include vacant areas in assessments.
Comment	Note vacancy rate on rating.

Building design occupancy

Issue raised	NABERS Energy for Offices does not take into account the design occupancy of the building. To obtain better ratings some new "green" buildings are being designed for occupancy of 1 person per 15 or 18 m ² . The tenant is then forced to install supplementary units where the occupancy exceeds this. This is in effect transferring some of the air conditioning duty from efficient base building systems to inefficient supplementary units, a retrograde step. It is also resulting in tenants in these "green" building obtaining poor NABERS Energy Tenancy ratings even though they have efficient lighting systems and sophisticated lighting controls.
Suggested fix	The NABERS rating rules should stipulate that the building be designed for the standard BCA occupancy rate of 1 person per 10 square metres and include a penalty for designers that wish to differ from this.
Comment	This issue is distorting the results of the rating system and tarnishing the NABERS reputation.

Hours of occupancy

Issue raised	Hours of Service are rarely put into leases as required by the NABERS protocol.
Suggested fix	Trust the assessor to properly determine what the start and stop times are without any further penalty.
Comment	The requirement to subtract 2 hours from what is seen on BMS logs does not accurately reflect true usage and can make ratings poorer than they actually are.

Issue raised	NABERS Energy for Offices - Base Building The perceived priority to have a Tenant Occupant Survey undertaken for a base building rating for the normal hours of use, as opposed to using the lease documents that indicate normal hours of use. The requirement for leases to specifically state that "the space will be safe, lit and comfortable for office work". Most current leases that have been in place for many years state the "normal office hours" for the lease period which means that the building is safe, lit and comfortable for office work.
Suggested fix	The priority for the base building hours of operation should be: <ol style="list-style-type: none"> 1. What the lease document states for "normal office hours" or what are considered to be "after-hours" or if the lease states the hours for which the space must be safe, lit and comfortable for office work. 2. Written amendments to the lease document signed by both parties. 3. Tenant Occupant Survey information. 4. Evidence of plant operation less 2 hours per day.
Comment	Undertaking a client survey adds unnecessary time to undertaking a NABERS base building rating and the results of tenant surveys are unreliable due to the people asked to complete them generally providing generic information rather than the specific information for the space they manage.

Issue raised	NABERS Energy for Offices - Base Building - Classification of "core building hours" in a lease agreement - leases are written in many different ways and the Rules are not clear enough
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	regarding the wording required to comply.
Suggested fix	More information/examples of how "core hours" must be defined in the lease agreement.
Comment	Often results in extensive debate between assessor and reviewer regarding wording of lease, with the Rules not being definitive enough to settle the dispute.

Issue raised	NABERS Energy for Offices - Hours of occupancy. The requirements for the hours of occupancy demand that leases must denote the agreed hours "the building is safe, lit and comfortable for office work". I have not yet encountered a lease with similar phrasing therefore tenant occupancy surveys must be used. In many cases the tenants do not afford any time or thought in completing the surveys (if return at all).
Suggested fix	Acceptance of the normal hours of service noted in leases.
Comment	By my experience the current situation leads to a reduction of the actual hours the building operates and adds unnecessary delays and cost to rating buildings.

Issue raised	NABERS Energy for Offices -The tool is not flexible with hours of operation. Most multi-floor buildings need to have tenancy floor temperatures available at occupancy lease time schedules. I believe NABERS does not allow additional run time to either cool or heat for morning occupation times.
Suggested fix	Most Building Automation systems factor in "Optimal Start Times Logic" to monitor out of normal office floor space average temperatures and calculate plant start times. I believe the normalized office hours used for calculations should include additional plant running hours percentage. Our tenants expect and demand environmental limits to be achieved and maintained irrespective of changing seasonal parameters. Alter process matrix to incorporate additional plant running times.

Issue raised	NABERS Energy for Offices - tenancy and whole building Documentation when conducting random interview staff to determine hours - Rules do not state that a survey form must be completed, however the reviewer required one and said that not having one would fail an audit.
Suggested fix	Clarify documentation requirements for Alternative Methods for verifying hours of occupation.
Comment	Potential for assessor to fail audit for a reason not clearly stated in the rules.

Issue raised	Rated hours - If the lease does not specify comfort conditions, the assessor takes 1 hour off at the beginning of the day and 1 hour off at the end of the which results in a deduction of 10 hours per week for the whole building. I understand that it takes time to bring the building to comfort conditions in the morning, but at the end of the day the building will maintain conditions even after the HVAC is turned off.
Suggested fix	Removing 1 hour at the beginning of the day is understandable, but taking 1 hour off at the end doesn't seem right. I would amend this by only taking off 1 hour in the morning if the lease does not state comfort conditions.
Comment	Reduction in hours per week negatively impacts on the rating.

Issue raised	Base building ratings on buildings with whole building ratings may be forced to use the tenancy occupancy survey hours of operation which are invariably less than those gained from BMCS afterhours request data.
Suggested fix	Change in priority for hours of operation for base building ratings so that leases hours + BMCS logged after hours data is top priority.

Comment	Reduced ratings or inability to get ratings.
Issue raised	The weighting given to tenant use rather than building efficiency.
Suggested fix	Buildings rated on standard hours rather than on hours operated.
Comment	Efficient buildings or non-efficient buildings are downgraded due to tenant use rather than the efficiency of the base building.

Definition of office/clerical activities

Issue raised	Office Base Building – non-office tenant operations on office floors. NABERS should consider expanding definition of office/clerical type activities to allow for non-clerical activities that are conducted with similar lighting, equipment and usage schedules.
Suggested fix	Widen definition of office clerical to a functional requirement i.e. lighting and equipment load W/ m ² and usage schedule information from BCA or AS1668.2 same as office (+/-25% say) then equivalent to office.

Issue raised	NABERS Office - Whole Building Non clear classification for areas that are fully lit and air conditioned as an office space such as Australia Post Mail Sorting area. It is unclear whether this can be classified as an office space or not, i.e. if mail sorting is considered as a clerical type of work.
Suggested fix	Improve the office space classification/definition to include broader range of work type not only specifically clerical as long as the areas are defined as NLA, and fully air conditioned and lit comparably to an office space.
Comment	Current classification disadvantages many buildings such as Australia Post GPOs where the ground floor is used mainly as mail sorting areas. These areas are already disadvantaged by the fact that there are no computers, and if not sub metered you will have an entire floor that is fully serviced by the base building with excluded area.

2.9. NABERS Energy - Systems

Supplementary systems

Issue raised	Allocating the energy of supplementary systems is currently unclear. The definitions of a system that is a tenant supplementary system versus a system that has been installed by the Base Building are unclear. Only definition includes the phrases "generic service" and "custom service" however there is no definition for either of these terms.
Suggested fix	Very clear definitions of what is and is not to be included under each rating need to be given. The handful of vague examples provided in the current Rules falls significantly short of allowing many common scenarios to be easily classified.
Comment	Huge variations in the NABERS rating of a building may occur depending on how the Rules are interpreted. For example in the event that it is determined that a supplementary tenant system is to be allocated to the Base Building and this system has insufficient sub-metering, ALL of the tenant energy must be allocated to the rating. In an example that I have encountered, the tenant energy consumption is more than that of the base building due to the tenant having many large computer rooms. The rating would change from 4.5/5 stars in this case to potentially 0 stars. Only one rating really represents the Base Building energy performance, however, the ambiguity in definitions severely compromises the supposed robustness and repeatability of the NABERS rating scheme.

Issue raised	NABERS tenancy Clearer definition/allocation of base building and tenant supplementary air conditioning systems
Suggested fix	Clear examples of where tenancy supplementary air conditioning units fall into the base building energy consumption assessment.
Comment	Defining what falls into the base building and/or tenant's assessment ratings can have a big impact on the rating result.

Tennant chilled water/Rule B2

Issue raised	One rule under Energy Coverage precludes the use of Supplementary Tenant Chilled Water. Rule B2 attributes energy used in supplementary tenant condenser water and chilled water as a base building item. This is understandable for supplementary tenant condenser water (because the majority of energy is from the tenant metered boards i.e. water sourced packaged units). However this form of cooling (cooling towers / water sourced packaged units) is inefficient when compared to providing direct chilled water to the tenant. By favouring condenser water over chilled water the rules tend to perpetuate an inefficient system.
Suggested fix	The solution is fairly simple: The tenant energy use can be metered directly and all energy use can be apportioned to the tenant.
Comment	A rule change to allow for chilled water to be used (for supplementary cooling) and directly meter the energy use.

Issue raised	Tenant installations or requests for installations make a base building rating worse. The main example is that a tenant's chilled water loop is installed in addition to a tenant's condenser water loop at the request of the tenant. This energy is therefore a tenant energy use but the base building is penalised when compared to other buildings.
Suggested fix	Where a condenser water loop and a chilled water loop are available for the tenant use the energy from the chilled water loop should not be included in the base building rating.
Comment	NABERS Energy Rule B2

Issue raised	Office Base Building - CHW Exclusion. CHW exclusion requirements should be updated for current technology and also clarified.
Suggested fix	CHW exclusion document is excellent but needs to be updated.

Estimating small thermal loads

Issue raised	NABERS energy for offices Apportionment of thermal energy use and / or estimation of small uses Unfairly increases emissions to buildings where a small thermal use like hot water is taken from an adjacent, larger and more efficient system.
Suggested fix	Include more flexibility in allowing assessors to put forward methods of apportioning thermal energy based on sub-metering and / or accurate estimations if they can be proven to be sufficiently accurate.

Gas calculations

Issue raised	Gas Exclusion calculations - Gas Tab: The 'Energy consumption in period' is currently calculated as the multiplication of both the energy content factor and the pressure conversion factor. This is effectively 'double dipping' the energy calculation. I have
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	correspondence from OEH that this is an error in the sheet. If needed I can forward this correspondence on to you.
Suggested fix	Change in formula.
Comment	Current calculation results in over calculation of gas energy exclusions.

Issue raised	The requirement to include a gas meter correction factor along with the gas heating value for gas bills can potentially skew sub meter data. This is due to the fact that for sub meter data you also apply a correction factor, but it takes into account the utility meter correction factor already. In most cases this won't cause serious issues, since typical meter correction factors are 1.02 etc., but for any larger (higher pressure) meters, you can have factors of around 2.0. This would then over report non-utility gas use by a factor of approximately 2.
Suggested fix	Simple fix within the spreadsheet
Comment	Potential to incorrectly report on sub metered gas use.

Treatment of cogeneration

Issue raised	NABERS Energy for Offices Inability to apportion emissions for cogeneration system based on heat use. If a part of a building gets benefit from the heat, but not the power, it still can't be apportioned any of the emissions. The user of the power gets the penalty of the emissions.
Suggested fix	Create a strategy for apportioning the emissions of a cogeneration system which splits it between the waste heat used and the power used.
Comment	Trigeneration also.

Diesel readings

Issue raised	Requirement for 2 diesel readings per annum.
Suggested fix	Trust what the building manager says.
Comment	When only one or no reading is made you need to add full tank capacity to the assessment.

2.10. NABERS Energy - Data rooms/Server rooms

Issue raised	NABERS Energy for Offices - base building - The inclusion of data rooms - a tenant constructed, wholly tenant operated and controlled server room must be included in the base building under the current rules.
Suggested fix	If server room can be proved to be solely used by a single tenant and was not constructed for base building, energy and AC associated with this room should be allocated to the tenant, not the base building.
Comment	Current situation has an unfair impact on the building owner/manager due to energy consumption outside their area of control

Issue raised	NABERS Energy for Offices - base building - Energy consumption in a tenant space where the tenant has removed the base building conditioning equipment and installed their own equipment to service a special load or area, such as a tenant modifying the internal layout of a tenancy and installing a server room, removing the heating/cooling system within this space and installing a cooling only system to service this space. This means the space is now not suitable for office space, however, as the tenant removed the existing heating/cooling, the new cooling only system must be regarded as the base building air conditioning for energy coverage.
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Suggested fix	Possibly calculate daily load for a normal office space (based on some W/m ² figure or based on dividing the AC consumption by the office area to get a w/ m ² , then multiply by area and occupancy to get a kWh/annum result) and use this as the base building energy consumption for the space, exclude the rest as tenancy energy.
Comment	In this “real world” scenario the Server AC operates all times, reducing the final NABERS result for a base building when the building owner is not responsible for the energy use within a tenant area.

Issue raised	NABERS tenancy - How to estimate energy consumption of server rooms within tenancy for prediction of performance required for commitment agreement.
Suggested fix	Better server energy consumption model based on experimental data to be specified in the energy simulation estimation guideline.
Comment	Low NABERS rating for tenancies with large data/server/comms room.

Issue raised	NABERS Energy for offices – tenancy Data Centre energy use may be excluded if it serves users outside the building, however in no tool does the end user need to add in energy they consume from remote data centres. In this way people are encouraged to locate their data centre storage offsite (which may not be a bad thing), and the energy is not attributed to anyone. There is a severe penalty to offices with a data centre located on site if it serves their building as they must include the energy in their rating.
Suggested fix	Either computer room energy is always excluded regardless of who it serves, or users must identify any computer facility serving their tenancy and obtain an allocation of the facility's energy use as a percentage of how much of the facility is used by them.
Comment	Some buildings are severely disadvantaged. In theory it would be possible for two adjacent buildings to agree to house a data centre / computer room for each other within their tenancy and each exclude the energy as it is not serving their own building.

2.11.NABERS Energy - Commitment agreements

Harmonise energy modelling protocols

Issue raised	NABERS Offices - Commitment agreement. Uniformity with BCA and Green Star; all 3 tools need to be rationalized in terms of scheduling, occupancy rates, metabolic rates etc.
Suggested fix	Harmonise energy modelling protocols
Comment	Currently causes confusion and unnecessary rework.
Note	Ongoing project with OEHS NSW, GBCA, ABCB, AIRAH, IBPSA, DCCEE.

Project feedback

Issue raised	The inconsistency between modelling protocols for Green Star, NABERS, and JV3 creates problems and inaccuracies. Better matching of the protocols to the NABERS rating is required via feedback from projects that are modelled.
Suggested fix	Co-ordinated feedback loop built into the commitment agreement between energy modelling and NABERS rating. Wording within the commitment agreement such that there is a grace period for which the building must be tuned to allow systems to be optimised to meet the energy target of the agreement.
Comment	Creates inconsistency and inaccuracies in the modelling outputs and hence commercial risk

	associated with NABERS commitment agreements. This is a serious PI insurance risk and a real issue for our insurers.
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Relationship with BCA

Issue raised	The BCA should use the precommitment agreement as an alternative solution.
Suggested fix	Modification of BCA.
Comment	BCA approvals.

2.12. NABERS Retail

2.12.1. Validation of central services

Issue raised	NABERS Shopping centres - The process of validation the central services across each 'zone' is extremely time consuming and makes the job almost impossible to price. We audited centres >100,000sqm and found the process extremely difficult and a deterrent to completing the rating.
Suggested fix	Develop a new way of reviewing the buildings.
Comment	Our client is unlikely to complete the ratings again until it is mandatory.

Issue raised	The non-consideration of trading hours particularly in how it disadvantages shopping centres where centrally services HVAC is provided to stores that have late trading hours or are 24/7. This is actually a perverse outcome because there is a move towards centrally serviced water cooled chilled water HVAC systems away for air cooled PAC units because of the overall greater energy efficiencies of these systems by comparison.
Suggested fix	Consider trading hours in the NABERS calculator. As part of the NABERS Retail Technical Advisory Group, I am aware of the efforts to resolve this issue. The problem is with small benchmarking sample size which does not provide statistically significant data to say this is an issue. There is a fix proposed, but it is taking a long time to resolve with OEH.
Comment	NABERS Retail Energy/Water - Lower rating result.

2.12.2. Allocations

Issue raised	NABERS Retail Energy and Water Tool doesn't allow for correct allocation of energy and water between base building and tenancy.
Suggested fix	Use the principles set in office protocol for retail.
Comment	NABERS Ratings don't currently reflect the performance of the property.

2.13. NABERS Hotels

2.13.1. Conference catering

Issue raised	NABERS energy and water for hotels - whole building When off-site catering is used to service the conference facilities then the star rating of the hotel is unfairly disadvantaged.
Suggested fix	A standardised energy usage based on number of attendees should be used when the energy cannot be measured.
Comment	Currently the resulting star rating is not representative of the hotel.

2.13.2. Serviced apartments

Issue raised	The NABERS Hotel tool ignored serviced apartments which are a major part of the hotel scene in Australia - Simply stupid or in the too hard basket?
Suggested fix	Add serviced apartments in to rating tool.
Comment	A large part of the market is missed out and therefore not influenced to change by this tool.

2.14. NABERS Water

Integrated stewardship of water

Issue raised	This tool does not go far enough to encourage integrated stewardship of water. We do not consider value of water as it integrates with the whole building. This includes the embodied water of items, embodied energy of water and allied resources like nutrients. Also no thought is given to GHG emissions from waste water.
Suggested fix	Develop meaningful metrics to address integrated stewardship of water.

Water and population

Issue raised	Water usage is highly dependent on population but the NABERS water tool does not take into account population density of a building, i.e. a low density population (1 person/15 m ²) will more easily obtain a higher rating than a higher density building (1 person/10 m ²).
Suggested fix	Add in a population factor as is done with the Energy tool to allow for greater density populations.
Comment	Current arrangement encourages design of lower population density buildings which will also affect energy consumption etc.

Manual meter readings

Issue raised	Often water ratings need to include a manual meter reading by the assessor as the utilities usually provide only quarterly billing. The water usage (e.g. in a final rating period reading) is taken from the previous utility reading to the assessors reading irrespective of the end date of the rating period with no pro-rata consumption considered.
Suggested fix	Allow pro-rata water consumption for periods using manual readings from an acceptable utility water meter(s).
Comment	The actual reading by the assessor can sometimes be substantially offset from the end of the rating period and include an unrealistically increased usage, distorting the rating result.

Estimates

Issue raised	Need the ability to estimate water uses as sometimes water uses aren't metered.
Suggested fix	Allow for some estimation.
Comment	We used Green Star water tool as we were unable to do an official NABERS rating.

Sustainability strategies/shower water use

Issue raised	Other building sustainable strategies such as encouraging people to cycle to work through providing cycle storage and shower facilities is not taken into account in the NABERS rating system. The provision of showers increases water usage of the building making it difficult to
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	achieve good NABERS ratings.
Suggested fix	Provide an allowance of water for this initiative in the rating process (as Green Star does).
Comment	Currently, designers wanting to achieve high NABERS ratings will not provide shower facilities for cyclists thereby deterring cyclists from riding to work.

Water for Hotels

Issue raised	Some hotels have pools, laundry, irrigation, cooling towers and others have only some or none of these
Comment	This impacts the amount of water used per square meter

2.15. NABERS Indoor Environment

General comments on NABERS IE

Comment	(NABERS is a) Globally leading rating system which needs to move into IEQ to ensure this significant area of future impact is not clouded by a mix of IEQ systems which are driven by commercial interests and not the best outcomes for all stakeholders.
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Comment	NABERS Indoor Environment is an excellent initiative and should be praised in the industry. The Indoor Environment is a very complex system, and rating this even more so. However, this must not preclude us (and AIRAH) as an industry in endeavouring to rate the most important influence on occupants and their productivity....the indoor environment.
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Industry profile for tool

Issue raised	This NABERS IE tool is not supported and promoted enough in industry.
Suggested fix	Provide funding for education.
Comment	Impacts on the ability to engage with occupiers on the benefits of good environmental upgrades and productivity in the workplace.

Interpretation of results

Issue raised	NABERS IE result is not clear; the tool cannot be interpreted by anyone.
Suggested fix	Develop a better tool.
Comment	Current tool cannot be interpreted by anyone.

Weightings

Issue raised	Note that the weightings for the NABERS IE tool should be revised regularly and changed when new research within the scientific community reflect such a change.
Suggested fix	Revise weighting regularly.

Ventilation measurement

Issue raised	Air / natural ventilation measuring protocol - the specified equipment is for external wind measurement not internal.
Suggested fix	Specify appropriate equipment.

Mixed mode ventilation

Issue raised	Ability to integrate mixed mode types - some buildings have closed, natural vent only, and mixed modes.
Suggested fix	May be integrating two sheets into one rating.
Comment	We had to do two ratings.

Ventilation effectiveness

Issue raised	Ventilation effectiveness assessment (using Carbon Dioxide as an indicator) is not scaled correctly.
Suggested fix	The points scaling should be altered to reflect current international knowledge and other rating tools in the industry (such as Green Star).
Comment	Current rules result in buildings with poor to moderate ventilation effectiveness (as measured using carbon dioxide) achieving maximum points in this category.

Thermal comfort

Issue raised	Thermal Comfort rating methodology is too simplistic or too coarse and will result in most buildings achieving full points.
Suggested fix	Increase the scope of Thermal Comfort testing to include more reference to ISO 7726 and ISO 7730 - International Standard for Measuring and Assessing Thermal Comfort.
Comment	Thermal comfort is not assessed correctly. This will result in most buildings achieving full points. It is also difficult to assess the NABERS Performance against standard design metrics such as PMV and PPD.

Airborne microbiological Sampling

Issue raised	Airborne microbiological rating methodology is flawed. The IEQ rating of the building can change by 0.5 to 1 star through natural environmental variation. Also there are some situations where good air quality (in terms of airborne microbial concentrations) is penalised.
Suggested fix	Either withdraw microbiological testing from the Rating Tool...or review the relationship used to assess the airborne microbial levels. The current method works up to a point (namely when outside air microbial concentrations are very low), and additional calculation is needed when these conditions apply.
Comment	Inconsistent ratings from current requirements.

Issue raised	It is known that microbial levels can vary dramatically with changing environmental conditions or locations within the day. As such it would be best to obtain multiple external microbial samples to obtain an averaged 'outside' result, thus reducing the error of external samples.
Suggested fix	As a means to reduce this error an external sample should be taken, which is then followed by all the internal samples and is finished with another external sample. However all microbial samples should be taken within a 1 hour time period as a means of reducing external variability. If all microbial measurements go over the 1 hour period then another external sample should be taken to account for and reduce external variability.

Analysis of microbial plates

Issue raised	Currently on page 53 of the NABERS protocol its states that a NATA accredited laboratory is to analyse the microbial plates. This is an added cost which could be avoided since the NABERS protocol does not require speciation of the mould/bacteria which is present. All that is
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	required for the NABERS IE is a cfu/m ³ number and as such it is sufficient for a competent laboratory technician to count the sample.
Suggested fix	It is sufficient for a competent laboratory technician to count the sample.

Airborne mould sampling section

Issue raised	NABERS IEQ currently specify testing for cfu's (Colony Forming Units) which is not the internationally accepted method of measuring mould in relation to IAQ.
Suggested fix	There are many experts who can provide more detailed advice on this subject but I think that NABERS need to engage one to get up to speed on it as it's a fairly important issue.
Comment	<p>The reason for this is that less than 30% of all mould spores are viable meaning that if you are culturing mould spores, what grows on a plate is not indicative of what is in the air that people are breathing in. For species of mould that release toxins, all their spores whether viable or not release mycotoxins and it is therefore more important to know that TOTAL airborne mould spore counts.</p> <p>Spores and mould fragments that release mycotoxins can both be measured by using spore traps.</p> <p>Also, some mould spores will not start growing on certain cultures until after the standard 5 days in the lab and some of these are the most concerning in relation to occupant health.</p> <p>All of this info and more can be referenced in the WHO guidelines for indoor air quality - dampness and mould - ISBN 978 92 890 4168 3.</p>

Air Sampling - Formaldehyde, VOC and PVOC:

Issue raised	<p>Currently air sampling requirements for Formaldehyde, VOCs and PVOCs are limited to one technique, i.e. silica sorbent tubes for formaldehyde, charcoal tubes for VOCs and XAD-7 for PVOCs, and as such will limit the choice of laboratories which can analyse these tubes.</p> <p>Current NABERS IE validation protocol limits the use of new advances in scientific equipment and techniques. In regards to air sampling for Formaldehyde, VOC and PVOC the most current advances are not being implemented. For example, XAD-2 (e.g. SKC 226-118) tubes can also be used for sampling of Formaldehyde and these have the added benefit that during transportation to the laboratory these tubes do not require refrigeration, whereas the use of silica tubes (e.g. SKC 226-119) requires refrigeration during transportation and should be analysed within 24 hours.</p>
Suggested fix	In order to not limit the use of advances in sampling technology and analysis methods the protocol should be specifying the use of sampling and testing techniques which are recognised by NIOSH, OSHA. Analysis methods should be validated and performed within a NATA registered laboratory. NIOSH methods for sampling and analysing Formaldehyde, VOC and PVOC are listed below.
Comment	<p>Method for Sampling and Analysis of Formaldehyde</p> <p>NIOSH 2016:- Sampling – Cartridge containing silica gel coated with 2,4-dinitrophenylhydrazine. Advantages: Method has a lower detection limit. Disadvantages: Requires correct storage conditions (<5oC) for sample integrity during transport.</p> <p>NIOSH 2541:- Sampling – XAD-2 (10%, 2-(hydroxymethyl)piperidine) Advantages: Samples storage can be at room temperature during transport. Disadvantages: Method has a higher detection limit, but within the requirements of the NABERS protocol.</p>

	<p>Method for Sampling and Analysis of VOCs NIOSH 1500 (aliphatic hydrocarbons), NIOSH 1405 (alcohols combined), NIOSH 1501 (aromatic hydrocarbons):- Sampling – Tube containing coconut shell charcoal.</p> <p>Method for Sampling and Analysis of aromatic PVOCs NIOSH 2546 (phenols):- Sampling – Tube containing XAD-7.</p>
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Hand Held Field Measuring Equipment

Issue raised	<p>Hand held field equipment should be cost effectively attainable. This requires equipment specifications for the measuring range, accuracy and resolution to be defined in the methodology which reflects current scientific equipment available on the market. Note that the measuring range, accuracy and resolution stated in the NABERS protocol should be set as a minimum requirement and not as the absolute requirement.</p> <p>Current equipment specifications are unattainable with equipment on the market due to very restrictive requirements.</p>																																			
Suggested fix	<p>The equipment specifications as stated in the table below are for scientific indoor environment quality measuring equipment which is readily available in the market. Equipment specifications as stated below should form part of the NABERS protocol. Hand held equipment should have a current calibration certificate showing that it has been calibrated to manufacturer’s instructions.</p>																																			
Comment	<table border="1" style="width: 100%;"> <thead> <tr> <th rowspan="2">Type of Measurement</th> <th colspan="3">Suggested Minimum NABERS Requirements</th> </tr> <tr> <th>Measuring Range</th> <th>Accuracy (see note)</th> <th>Resolution</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>10-40°C</td> <td rowspan="9">Accuracy is usually one tenth the resolution, therefore accuracy is not required to be stated. Note also that stating accuracy leads to compliance problems as accuracy decreases as you approach the limits of the instrument.</td> <td>0.2°C</td> </tr> <tr> <td>Relative Humidity</td> <td>10-90%</td> <td>1%</td> </tr> <tr> <td>Carbon Monoxide</td> <td>1-50ppm</td> <td>0.5 ppm</td> </tr> <tr> <td>Carbon Dioxide</td> <td>100-5000ppm</td> <td>5 ppm</td> </tr> <tr> <td>Particulate Matter (PM10)</td> <td>1-5 mg/m³</td> <td>0.02 mg/m³</td> </tr> <tr> <td>Air Speed</td> <td>0.05-10m/s</td> <td>0.02m/s</td> </tr> <tr> <td>Light Levels</td> <td>100-2000lux</td> <td>1 lux</td> </tr> <tr> <td>Sound Levels</td> <td>35-100dBA</td> <td>1 dBA</td> </tr> <tr> <td>Microbial</td> <td>10-5000 cfu/m³</td> <td>5 cfu/m³</td> </tr> </tbody> </table>	Type of Measurement	Suggested Minimum NABERS Requirements			Measuring Range	Accuracy (see note)	Resolution	Temperature	10-40°C	Accuracy is usually one tenth the resolution, therefore accuracy is not required to be stated. Note also that stating accuracy leads to compliance problems as accuracy decreases as you approach the limits of the instrument.	0.2°C	Relative Humidity	10-90%	1%	Carbon Monoxide	1-50ppm	0.5 ppm	Carbon Dioxide	100-5000ppm	5 ppm	Particulate Matter (PM10)	1-5 mg/m ³	0.02 mg/m ³	Air Speed	0.05-10m/s	0.02m/s	Light Levels	100-2000lux	1 lux	Sound Levels	35-100dBA	1 dBA	Microbial	10-5000 cfu/m ³	5 cfu/m ³
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Carbon Monoxide

Issue raised	<p>Currently the Australian Standard criteria for air pollutants states within the National Air Quality Standards that carbon monoxide should not be above 9.0 ppm measured over an 8 hour period. This should be reflected in the NABERS spreadsheet as currently the NABERS protocol states that Carbon Monoxide threshold level is 10 ppm.</p>
Suggested fix	<p>Change Carbon Monoxide threshold level to 9 ppm.</p>

Lighting

Issue raised	<p>According to AS1680.2.2 a minimum of 320 Lux should be maintained on the working plane, this can either be on the horizontal plane or vertical plane. Note that measurements of lighting levels should be in line with the Australian Standards, e.g. measurement of light levels on several desks and surrounding areas (e.g. corridors).</p>
Suggested fix	<p>Measurements of lighting levels should be in line with the Australian Standards.</p>

2.16. NABERS Waste

Application

Issue raised	Two different waste audit teams could arrive at 2 very different ratings for the same building. In part this is due to lack of accurate source data (i.e. even the best waste records are not nearly as accurate as electricity invoices), which can't be overcome by NABERS, but there are still problems with the assessment protocols which could be improved.
Suggested fix	Review tool.

Assessment costs

Comment	Costs are prohibitively high (up to \$20K/site), which combined with issues re validity of the data has led to poor update of this tool.
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2.17. NABERS Data Centre tool

Issue raised	NABERS Data Centres - Whilst I understand this tool has not yet been released - we are wondering how it will align with the more traditional PUE ratings for Data Centres? Possible confusion in the market regarding the ratings, given that PUE is an already established rating system.
Suggested fix	Ensure that the new tool is aligned to the PUE rating or that it is directly comparable.

Comment	When are the other tools e.g. data centres going to be available? They have been "coming" for a long time now.
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2.18. Future development of NABERS

Comment	NABERS needs to perhaps consolidate a number of its sectoral ratings (energy, water, IEQ etc.) into an overall sustainability rating to accommodate international benchmarking.
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Comment	Look forward to NABERS education rating tool.
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Comment	When will NABERS start doing houses in NSW?
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2.19. Comments submitted - no classification

Comment - Heat exchangers	Would like a new standard to rate heat exchangers. AHRI Type certification tool to be implemented to assess efficiency of heat exchangers in water to water applications. Will help in attaining the highest Green Star rating for Buildings. We need to put forward a suggestion on setting up a standard for certification of water to water heat exchangers to make sure client gets the most efficient system. Would like to get involved more in the activities of NABERS from a heat exchanger supplier perspective.
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Comment - Survey format	I was expecting a survey with specific questions. I was not expecting open questions when commencing the survey so have had not had time to contemplate greater philosophical or structural issues related to NABERS. It would have been preferable if this on-line "survey" had a save and return function.
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Comment - Sceptics	I think green property is a load of baloney, scrap preoccupation with global warming.
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Comment - Rated display	Rated buildings should get some official form of display media/sticker, or some other way of promotion of its status.
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3. Administrative issues raised

3.1. Introduction

This section of the report outlines all of the administrative issues raised by respondents to the survey. Issues have been sorted into categories based on the following headings.

- Governance
- Communication
- Rulings
- Technical support
- Lodgement process
- Website
- Data format
- Clarity/complexity

3.2. NABERS Governance structure

Issue raised	Governance structure for NABERS is not clear.
Suggested fix	Make structure clear; publish minutes, host communication events for interested parties.
Comment	Lack of trust in tool when governance is not transparent.

3.3. Communication and consultation

Issue raised	The (all) NABERS tool is constantly being updated without industry consultation. A great example is the revised Victorian benchmarks that were issued without notice.
Suggested fix	Given that NABERS is now a mandatory tool that impacts on the building value a greater collaboration is required in updating the tool and the impact of any changes.
Comment	There are a number of studies that have highlighted the financial impact of NABERS star ratings (see IPD index). The impact of changes to the NABERS rating are not restricted to financial impacts but legal implications in lease negotiations, industry education issues and uncertainty. All these issues are counter-productive for businesses and affect the validity and effectiveness of the NABERS tools.

Issue raised	Communication is a major issue. On May 2011 there was an email sent out to NABERS assessors outlining the fee structure changes whereby assessors would be charged directly for a rating and that OEHL would not be charging building owners for the rating. This is a clear example of the lack of industry knowledge when making these decisions. Another example occurred during November 2010 where the rating system for Victoria was overhauled without any prior advertisements.
Suggested fix	There should be at least 6 months waiting period before implementing new changes such that there is time for the industry to understand the implications and adjust.
Comment	NABERS assessors would exclude these costs as building owners traditionally pay for the rating. Furthermore there is approximately 4-5 months of time delay between getting engaged as an assessor and submitting the rating (when you would get billed). Therefore the lack of understanding of this process leads to all assessors having to go back to their clients and revise their fee proposals and ask for variations. This is also not advertised on the NABERS website which makes it harder to communicate the change with the client.

3.4. NABERS rulings and interpretations

Issue raised	Currently there are a number of rulings made on the interpretation of NABERS rules. Some of these rulings are published on the NABERS assessors' private website as rulings whilst others are issued as emails. The general public does not have access to all of these rulings nor do all assessors (in the case of emails). The rulings do not get published as such different NABERS assessors end up having different opinions based on specific rulings.
Suggested fix	Clear and open clarification is required around the rulings with the rulings to be made public. Any clause that has been clarified or a ruling made for a particular NABERS rating should be appended to the NABERS rating itself so that future assessments / assessors understand the history and application for a given site. This will help to clarify ambiguous clauses by providing examples of practical applications and provide a more level playing field for building assessments. With legislation and mandatory reporting it is crucial that there is consistency across the industry. There needs to be a process where-by if a decision made then that decision affects the industry equally and sets a precedent for future decisions. Then where regular decisions on more common scenarios start to immerge then updates to the NABERS rules and protocols document should occur, for example on an annual basis (similar to updates to the BCA).
Comment	Currently the interpretation between NABERS assessors seems to vary on some of the basic parameters such as afterhours operation and base building hours of operation. This only adds to the confusion for a building owner. This leaves the industry unsure of what is 'opinion' and what is actually part of the protocol with the risk that an independent assessor may interpret differently to the detriment of the building rating. Due to varying interpretations of the NABERS protocol, large amounts of time are spent (lost) in meetings and on projects seeking clarification before actually looking at how to apply the clauses themselves. This also reduces the industry's ability to quickly develop an understanding of 'case law' with respect to interpretation of the rules.

Issue raised	Rulings are not available publicly; notice isn't given when rulings are made.
Suggested fix	Disclosure of rulings on the website in a similar way to Green Star rulings.
Comment	Dilutes trust in NABERS when rulings are not made generally and publically available.

Issue raised	NABERS Energy for Office (All) These tools have to be better streamlined and updated on a monthly basis (if required) due to the importance of this tool used for rating very important buildings in and around the CBD.
Comment	Currently these tools are not user friendly. It is difficult to manage and ensure all information is in.

3.5. NABERS technical support

Issue raised	General technical management. I am concerned that the Level 2 auditors for the scheme have become increasingly marginalised in the setting and interpretation of the NABERS Rules. This is a problem as while the L2 Auditors have mostly been working on the scheme for 5-10 years, the average OEH staff member has been there for 1-2 years.
Suggested fix	There needs to be a clearing house for technical discussions and dispute that works to serve as a mechanism for maintaining consistent interpretations between external and internal auditors. It also needs to act as a training mechanism and a method of managing corporate knowledge within the scheme and outside the head of any individual.
Comment	There is a loss of corporate knowledge and continuity occurring which is expressed in terms of the number of run-ins between auditors, experienced assessors, and OEH staff over technical interpretations. There has to be a better process for the raising and resolution of such issues than at present, which is causing considerable frustration and a degree of alienation amongst many that have worked with the scheme for many years, people who should be and want to be the scheme's greatest supporters.

Issue raised	Advice hot line needs more technical knowledge, the advice given often shows a lack of understanding of building services.
Suggested fix	People from industry should be employed for the advice hotline, people that know building services and can speak the terminology.
Comment	Advice provided can cause confusion.....incorrect interpretations, wrong outcomes.

Issue raised	All tools - Technical queries are answered poorly by NABERS staff - they often don't seem to understand the question, or provide an answer clearly contradicting the rules.
Suggested fix	Better training and quality of NABERS staff.
Comment	It is time consuming and frustrating trying to clarify an issue, often with an unsatisfactory resolution.

Issue raised	All tools - At times I find the NABERS team ignorant of logic where an issue is not directly covered within the Rules. I also find the NABERS team to be unfamiliar with standard building services which makes it very hard to explain issues to them.
Suggested fix	Either the NABERS team are trained adequately or their authority on some issues is reduced.
Comment	This results in general frustration, sometimes resulting in penalties applied to a rating unjustly.

Issue raised	All protocols Knowledge base and consistency amongst the Level 1 Auditors is lacking. The auditors appear to have less knowledge of the Rules than I do, with myself often correcting them on rulings. Rulings are taking far too long to complete. One recent ruling took 9 months to action - which made us (as the assessor) look incompetent.
Suggested fix	More action from the National Administrator.
Comment	Ratings are taking far too long to complete as we argue back and forth.

Issue raised	NABERS energy for offices is continually changing; new spreadsheet is difficult to get technical assistance with.
Suggested fix	More technical people employed by the administrator.
Comment	Current lack of clarity costs me time and money.

Issue raised	NABERS energy for offices - The main issues I had was with NABERS personnel not being able to provide clarification on issues (gas meter verification) when no one understood what was required. The advice I received was along the lines of tell my client to get it done or they don't get a rating. This is terrible especially considering the tool has become legislation.
Suggested fix	Possibly better training for staff.
Comment	It reflects poorly on me as an individual and when the client saw the response provided by NABERS staff they lost all respect for the program.

Issue raised	Supervising assessors giving erroneous advice or asking for information outside NABERS scope.
Suggested fix	Better trained/educated supervising assessors.
Comment	Delays in providing supervised ratings.

Comment	The NABERS Energy and Water tools are becoming widely accepted by industry and are generally appropriate for their intended end use. The tools should be improved where possible over time in consultation with industry (as per this survey). Previous experience has shown that the NABERS team may need more experience with buildings and their services, and should be required to conduct a minimum of 10+ ratings including at least 5 tenancy and 5 base building ratings, prior to being able to work in the department as an advisor. Too often clarification is sought by assessors on the NABERS Rules, with the resulting advice provided by OEHL taking a long time to be received because advisors need to seek advice themselves, or resulting in no clarification at all. It seems that the advisors have difficulty putting themselves in the shoes of the assessor, and are therefore unable to provide a clear answer, leaving the assessor to interpret not only the Rules, but also the OEHL advice.
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Comment	The overall process is good; however the 'National Administrator' appears to be missing in action. We deal with a revolving door of level 1 auditors who have a range of knowledge, some helpful, some appear out to make our lives difficult. There needs to be more flexibility in the process, as there are so many buildings which do not fit the rules and must be considered specifically. The auditors do not have this authority to look outside the box.
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Comment	<p>It takes too long to get the reports certified.</p> <p>It takes too long to get a written response.</p> <p>It takes too long to get an answer to a question.</p> <p>The NABERS team need more resources.</p> <p>Assessors need more support.</p>
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3.6. Lodgement process/spreadsheet

Issue raised	All NABERS TOOLS – No problem with the tools - but I do have problems with the spread sheet and lodgement process. Firstly - the spread sheets are becoming unwieldy – too many boxes. Great for QA, but for an experienced assessor they are a pain. More annoyingly though is the lodgement process which requires heaps of information that is in the spread sheet to be transcribed into the lodgement form – WHY? It leads to mistakes, it is highly annoying and it wastes time. The information is already in the spread sheet so if the administrator wants it separated they could just run a macro Oh, and while I am whinging – the standard NABERS spread sheet – which you download from the NABERS web site - is in .xlsm format – but the web site won't let you upload it – you have to save it in another format (e.g. .xls) How stupid is that!
Suggested fix	Simplify the spread sheet and revamp the lodgement process such that only the spread sheet need be lodged- possibly by email.
Comment	Current lodgement process wastes time and annoys the assessor.

Issue raised	The file size is large and can fail to be submitted through our servers.
Suggested fix	Perhaps the separation of indoor environment and waste from the energy and water component will cut down the file sizes and allow faster transmission.
Comment	Transmission issues...i.e. Uploading to NABERS.

Issue raised	All NABERS tools - The process is too convoluted and involves entering data into a spreadsheet, into the NABERS on line calculator, and the NABERS application form. The same data needs to be entered into multiple forms increasing the potential for errors to occur.
Suggested fix	Development of a single tool so that data only needs to be entered once.
Comment	Increases time required to perform NABERS assessments and increases the potential for errors.

Issue raised	The level of data entry to submit a rating once it is complete is ridiculous. All the data is entered into the online calculator. Then you need to transfer results from online to your spreadsheet. Then you need to enter all the data onto an online application form (including the information given to you from the online calculator). Then print the form, get it signed, and send it in. The website can be very slow and can take a very long time to complete this process.
Suggested fix	Build the rating result calculations into the spreadsheet so the assessor doesn't need to go online. Also, build the application into the spreadsheet to minimise documentation requirements.
Comment	This issue is more than just a pain – it is unprofessional as I see it.

Issue raised	NABERS Energy for offices - base building plus others. General issue with all NABERS tools with cells where we are meant to enter text to explain our decision making process, or reasons for excluding or including an energy / water use. These cells are a fixed row height and make it very difficult to check back what you have written. You have to use the text bar at the top which is awkward. These cells should "auto fit to contents" so the text can be read easily.
Suggested fix	Make cells auto fit to contents.
Comment	Currently makes checking of text entered difficult.

Issue raised	NABERS energy for offices - base building, plus others. I have issues with macros not working properly in the hours tab if I have selected one option first, and then selected another. For instance, if I select no AHAC for a FS, then receive info that there was, the macro that generates the figures in the columns where hours can be entered does not run and the cells remain blue and text cannot be entered. This sometimes corrects itself when the spreadsheet is closed then opened again.
Suggested fix	Fix macro.
Comment	Wastes my time while I have to get macro to work properly.

Issue raised	Energy for offices - Uploading of information to the website is horrible.
Suggested fix	Spend some money to upgrade website to user friendly system.
Comment	Current website wastes my time.

Issue raised	<p>Currently the NABERS spreadsheet is somewhat tedious to use (fill out) as there is some information within the spreadsheet which could be streamlined to increase ease of use. For example the spreadsheet could be easier to use by including the following:</p> <ul style="list-style-type: none"> • If NABERS energy is being performed for example, you select NABERS Energy and insert 'Not Applicable' for the other NABERS tools then the sections of the spreadsheet which are Not Applicable should then all blank out. • The spreadsheet would be easier to use if in the IE section there was a sheet which allowed the assessor to enter the occupant satisfaction percentages for Air Quality, Acoustic Comfort, Lighting and Office Layout and the spreadsheet performing the relevant calculations directly and added the calculated numbers into the relevant sections. • Note that the weightings for the NABERS IE tool should be revised regularly and changed when new research within the scientific community reflect such a change. <p>In the NABERS spreadsheet the 'Info to be Retained' tab requires the assessor to go through the whole page with the majority of the time spent adding 'Not Applicable' to most of the sections. It would be useful to divide this section and adding an 'Info to be Retained' tab into each section (Energy, Water, Waste, IE) of the spreadsheet. This would minimise the need to go through the whole page as is currently required.</p> <p>A noteworthy point for NABERS IE is that the hours of occupancy is not required and as such does not need to be filled in the NABERS spreadsheet. However when the spreadsheet is submitted to NABERS through the online submission page one tab which needs to be filled in is the hours of occupancy. This issue may be easily overcome by adding a N/A tab on the online</p>
Suggested fix	As per suggestions above.

Issue raised	NABERS Office data collection spreadsheet cover page does not collect all data that is required when formally submitting for certification. When putting in for certification details such as building phone numbers, office numbers etc. are required. These should be part of the rating tool spreadsheet's base data collection for a central repository.
Suggested fix	Add additional fields to spreadsheets to include all information.
Comment	Potential delays in data collection as not all relevant questions are on the rating spreadsheets.

Comment	The process is good in theory but the assessment/lodgement process is horrible for an assessor, we continually waste time and most jobs are won by small one man bands who I'm sure don't have the correct level of insurance.
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Comment	I would prefer that the NABERS application page on the NABERS assessor section has a 'print preview' so that an assessor could review the application form prior to submission. Like everyone else, I'm poor at typing and sometimes my spelling needs Korrecting. Once the 'submit' button has been pressed, it's too late.
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3.7. NABERS website

Issue raised	I find the web site is difficult to use and understand.
Suggested fix	Major upgrade of the site.
Comment	Currently time is wasted and mistakes are made due to lack of information.

Issue raised	All NABERS Ratings Inability to submit rating spreadsheet via NABERS website. Always have to attach a blank one and then e-mail the correct one.
Suggested fix	Improve website.
Comment	Slows down lodgement process.

Issue raised	All Energy tools - The website displaying the results of buildings initially only shows you, or allows you to sort, by the star rating with Green Power. To benchmark buildings as they perform without Green Power, you have to go into each entry and check the details. This is inconsistent with the way the certificates are presented which shows both results, with and without Green Power. I feel it would be better for casual viewers who are using this tool to benchmark buildings to give them the option of seeing and sorting buildings by both ratings - with and without Green Power
Suggested fix	Modify the web site to allow both ratings to be displayed and used as search/sort criteria.
Comment	The initial display on the website does not give a clear indication to users of those buildings that are more energy efficient rather than just relying on Green Power to achieve the NABERS targets.

Issue raised	I don't have any issues apart from the website. Would be good to be able to print off all companies in a particular state which is not possible currently.
Suggested fix	Upgrade of website. I did note that some of the attached documents on the website have not been updated to reflect 6 stars.

Comment	On the NABERS building rating site it may be nice to give building owners to option of stating what kind of mechanical services are installed (VAV, VRF, PCD, etc.) and the type of general lighting installed (28W T5, 36W T8) to allow a more detailed comparison between the buildings.
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3.8. Data format

Issue raised	NABERS Energy for offices; Electricity data should be able to be input from “edi” files and avoid requesting paper copies when they are not required.
Suggested fix	Change methodology to accept “edi” files where that is the standard issue from the supplier
Comment	Environmental impact and time cost associated with waiting for paper invoices to arrive

3.9. Clarity and complexity

Complexity of process

Issue raised	Gathering all the data required.
Suggested fix	Develop simpler processes and spreadsheets.
Comment	Currently a long process

Complexity of rules

Issue raised	NABERS Energy for Offices - Overly complicated rules regarding the data inputs.
Suggested fix	Simplify the rules - don't try and cover every oddity and loop hole.
Comment	Current requirements increase costs and are time consuming.

Clarity in rules

Issue raised	Some aspects of the tool and specifically the rules are confusing - and will result in different interpretations by different assessors and different technical advisers and supervisors at OEH.
Suggested fix	Provide clarity in the written rules.
Comment	Uncertainty in approach, variations in assessment outcomes if clarity is not achieved.

4. Training, compliance and costs issues

4.1. Introduction

This section of the report outlines all of the Training, compliance and cost issues raised by respondents to the survey. Issues have been sorted into categories based on the following headings.

- Training
- Compliance
- Costs

4.2. Training

The following issues were raised with regards to training.

More NABERS assessors training rolled out

Issue raised	Additional training for the BEEC would be good.
Suggested fix	A few more training sessions followed by assessments
Comment	Limited number of assessors available to carry out NABERS / BEEC ratings.
Comment	NABERS training should be include in all FM courses offered by NRT education institutions e.g. RMIT, UNE, etc.
Comment	Great tool but more public education is required, especially for government departments that request NABERS ratings for buildings that cannot/should not be rated using NABERS.
Comment	Why do assessors have to do the full NABERS course when they only want to use NABERS energy?

Mentoring with NABERS supervisors

Issue raised	NABERS Energy - NABERS rating is not a constant source of work so the difficulty is with becoming familiar with the protocols when they are continually changing/upgrading. I guess it will continue to evolve as technology advances.
Suggested fix	Perhaps a mentoring/coaching relationship with NABERS supervisors would help.
Comment	I have withdrawn from NABERS assessing.

Assessor training

Issue raised	The current NABERS Training needs to be revised. In particular to note the following issues: The examination is set up in a way that leaves the trainee not knowing what the correct method of undertaking a particular procedure is. - There seems to be very little screening in who can become a NABERS assessor. There should be at least some screening to avoid the branding being tarnished.
Suggested fix	Minimum industry knowledge requirements for NABERS assessors may be a way forward. Investigations into the current exam process will also assist in finding better educating methods. A list of common errors could be issued to assessors to help them going forward. Retraining, in the form of webinars, of current assessors may also be a good way of ensuring that a minimum standard is achieved by all assessors.
Comment	Assessors are no better equipped of finding out what they didn't know after the training.

	Inadequate screening of NABERS assessors will lead to more audits and issues with incorrect ratings.
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Awareness

Issue raised	Energy for office – tenancy. For potential CitySwitch Signatories: - general awareness and understanding of the tool - identification of the right accredited assessor - cost associated with the tool is often a barrier for business - right / adequate metering (for the office floor - and especially in mixed buildings).
Suggested fix	Ensure CitySwitch has all the right tools to help NABERS education process. Ensure business understand the real end benefits of NABERS (potential savings, national benchmark, case studies that shows benefit, State Gov. offices to show the way, etc.). Help businesses train their own assessors (and help them understand how to do this).
Comment	Poor awareness slows the process down (education + collection of data + id assessor + financial commitment).

Comment	NABERS is a fabulous tool. It offers a reliable and respected benchmark to help business evaluate their performance over time. This tool needs to become more 'accessible' to the 'sustainable' champions that drive change in the business community. In addition, NABERS is holistic, above and beyond energy. It is also a message that CitySwitch CoS communicates to Sustainable Directors when they do not know. There is much education needed around the NABERS tool - we may need more support from OEH to ensure contacts/'how to' tool kits/ what assessors to use to make it easier for businesses etc.
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Building owners knowledge

Issue raised	All NABERS tools - My issue is with building owners and managers who are not prepared to educate themselves and assist in the rating process, leaving the legwork to the NABERS Assessor, who is not in a position to access information held only by the BOM
Suggested fix	With a sledgehammer, and an education campaign with much more detail - As an assessor I have to educate each of my clients to help them find each piece of documentation, then remind, remind, remind....
Comment	Time and cost overruns on ratings.

Industry profile for tool

Issue raised	This NABERS IE tool is not supported and promoted enough in industry.
Suggested fix	Provide funding for education.
Comment	Impacts on the ability to engage with occupiers on the benefits of good environmental upgrades and productivity in the workplace.

4.3. Industry Compliance issues

The following issues were raised with regards to Industry compliance with NABERS ratings.

4.3.1. Independent Audits

Detail	NABERS Energy & Water for offices (all types), NABERS Shopping Centres, NABERS Hotels It is not policed well. I do my ratings in strict accordance with the Rules. I believe other assessors are a bit more relaxed with respect to compliance with the Rules and the buildings they rate sometimes benefit (unfairly) from that.
Suggestions	Conduct audits of ratings where the auditor actually goes to site and completes the whole rating independently.
Comment	The policing issue is significant for my company. It's hard to tell our clients why they would want to use us when they could just go to another assessor and get an artificial 5-star rating.

4.3.2. Inconsistency in audits

Detail	There appears to be some discrepancies in the method of calculating emissions. For example, an approximate energy saving of 18% was identified by our NABERS assessor for the previous reporting period yet when asked how this was arrived at or what could have given rise to this (as there were no radical differences in our use of office equipment/floor space etc.) it couldn't be readily explained by the assessor and we are yet to hear the outcome.
Suggestions	By asking the assessor to clarify, I have done so earlier in the year and have followed up but am yet to hear the outcome.
Comment	This experience causes me to question the level of rigour in which the assessments are completed.

Comment	The processes to achieve ratings appears to be getting more convoluted and I have observed that previously rated building (by other assessors) could not have had all of the required documentation to complete the rating, indicating there are short-cuts being taken by some assessors. I am aware that ratings need to display an accurate account of a buildings activity, energy usage and water consumption however the process requires simplification to guarantee consistency of the ratings.
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4.3.3. Assessor skills

Detail	Mandatory disclosure has led to a down-skilling of assessors (on average) across the market. The good ones still exists, but there are a lot of new assessors trying to capitalise on the new legislation that don't have the experience of those that have been around for a few years.
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4.4. Costs, fees and charges

The following issues were raised with regards to costs, fees and charges associated with NABERS ratings.

Fees for auditors and trainers

Issue raised	The other issue I'd like to raise is the appalling charge rates being dictated by NABERS for auditors and trainers - currently \$160/hr + GST, which are actually lower this year than last!!! This is less than cost for my time, making it hard to feel valued. It's only because I value the scheme that I agree to what is otherwise, frankly, a bit of an insult.
Suggested fix	Review charge rates

Certification fee structure

Comment	The certification fee structure is too expensive. It prices smaller clients out of getting a rating and this is not sending a good message. I would say the fee should be reduced by at least 50%-70%, especially for smaller spaces. A 2,001m ² building is the same price as a 150,000 m ² building, this is just plain wrong.
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NABERS Waste costs

Issue raised	Waste costs are prohibitively high (up to \$20K/site), which combined with issues re validity of the data has led to poor update of this tool.
Suggested fix	Review tool.

NABERS Energy costs

Comment	Cost of energy ratings is now more diverse than pre-mandatory disclosure. Top consultants still charge similar rates, but there has been a lot of pop up consultants offering bargain basement pricing. In part this is market driven, as some owners/leasers just want to get a rating to tick a box for sale/lease purposes, but it also puts downward pressure on rates for undertaking a more comprehensive rating process. Given that NABERS defaults to the worst possible scenario in the absence of supporting data (i.e. re vacancy), the cost of obtaining a plain vanilla rating goes down, but the cost of obtaining a comprehensive rating remains about the same.
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Appendix A - Organisations that participated in the survey.

Thank you to the following organisations who circulated the survey to their members and contacts.

Local, State and Commonwealth government

ACT Department of Planning of Planning
NT Department of Construction & Infrastructure
Industrial Energy Efficiency Branch -Department of Resources, Energy and Tourism
AusIndustry, Supplier Advocate Section, Manufacturing Division, Department of Innovation, Industry, Science and Research
Low Carbon Australia
Office of Environment – various business units
NABERS accredited assessors
CitySwitch (Victoria and City of Perth) and circulated to all state CitySwitch managers
Municipalities Association of Victoria

Industry and professional associations

Australian Institute for Building Performance Research
Australian Sustainable Built Environment Council
Association of Building Sustainability Assessors
Engineers Australia
Institute of Plant Engineers Australia
Institute of Hospital Engineers Australia
Lighting Council Australia
Sustainable Energy Association
Real Estate Institute of Australia
Green Building Council of Australia
Housing Industry Association
Royal Institute of Chartered surveyors
Consult Australia
Australian Industry Group
Australian Institute of Architects
Building Commission Victoria
Air Conditioning and Mechanical Contractors Association
National Electrical and Communications Association
Australian Property Institute.
Facilities Management Association of Australia
Australian Construction Industry Forum
Chartered Institute of Building Services Engineers

Publications and media

Energy Smart Buildings publication
Ecolibrium
The Fifth Estate
AIRAH newsletters

Skills councils

EE-OZ Training Standards