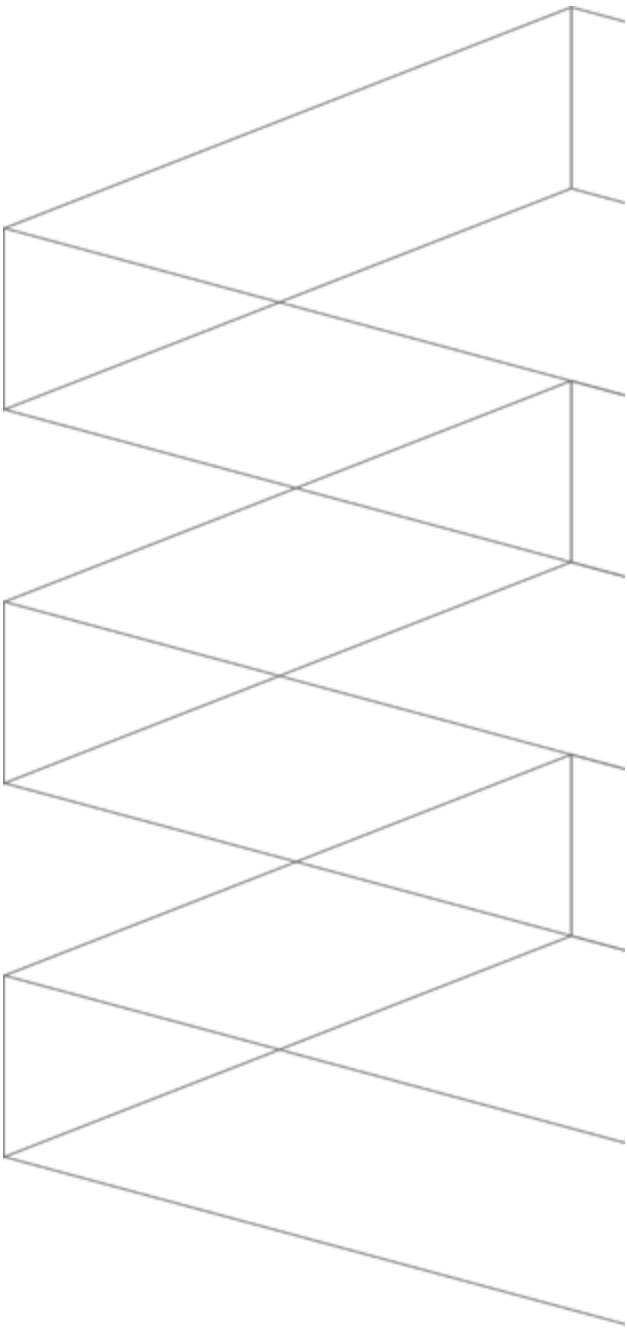
AUSTRALIAN PASSIVE HOUSE ASSOCIATION

SUBMISSION TO THE NSW PRODUCTIVITY COMMISSION



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Acknowledgements

This report was prepared by the Australian Passive House Association.
Credit to the Strategy working group lead by [redacted]

About

The Australian Passive House Association (APHA) is an independent, not-for-profit organisation which aims to promote Passive House principles as a way of providing superior indoor comfort and air quality while reducing energy use and carbon emissions from Australia's buildings.

APHA's membership consists of building industry members, architects, designers, engineers (hydraulic, mechanical, structural), ESD consultants and suppliers.

Our Mission
All Australians live and work in healthy, comfortable, low energy, resilient buildings.

Our Vision
Lead change by educating, promoting, and supporting the delivery of Certified Passive House buildings in Australia.

1. Introduction

This submission to the NSW Productivity Commission by the Australian Passive House Association (APHA) addresses the call for feedback on which policy options should be considered contributing toward a Productivity Green Paper by the NSW Productivity Commissioner.

The area of interest that APHA writes relates to the building industry, in particular high performance energy efficient homes. We outline two areas where Passive House can contribute to productivity in NSW.

2. Planning

Many of our members are designing and building certified Passive House buildings. This is a rigorous, science-based approach to design and construction with a long history of delivering high quality, comfortable, healthy homes that are also highly energy efficient. The software that allows this to happen, the Passive House Planning Package (PHHP) has a strong correlation between predicted performance and actual performance i.e. there is no Performance Gap.

In the current regulatory framework in NSW all residential projects need to comply with BASIX. The PHPP has rigorous inputs, a robust quality assurance system and reports on the same heating, cooling and energy metrics as BASIX.

The current process requires as projects designed using PHPP to also obtain a BASIX certificate, this often also requires a NatHERS certificate to prove compliance with the thermal comfort component of BASIX. At best this adds $300 per dwelling, as worse over $1000.

Recognition of PHPP through the BASIX legislation would lead to reduced delivery costs for quality buildings that, due to their higher performance, will also reduce greenhouse gas emissions, improve comfort and increase confidence in the ability of our construction sector to deliver future-ready buildings.

Appendix 1 is a document prepared for the BASIX team that outlines more of the details as to the viability of this proposed change.

3. Forward-looking regulation that supports innovation and competition

Passive House buildings are highly efficient, comfortable and healthy homes. In recent years there has been a significant uptake in certified Passive House projects in many locations around the world. The original drivers of these changes vary but include

environmental reasons, addressing poor building quality, increasing resilience, improving health outcomes and driving economic growth.

The case for higher thermal performance standards has been well-made in Australia yet continues to remain substantially unaddressed. The work of ASBEC covers many of the issues. https://www.asbec.asn.au/

Recent work in Canada has been drawing attention to the economic benefits of high-performance buildings. In Vancouver alone, they estimate an economic opportunity of $3.3bn arising from increased standards. https://www.vancouvereconomic.com/blog/news/vec-forecasts-massive-demand-for-greener-buildings/

APHA members are designing and building high-performance buildings now across the country. Many of the products that are required to deliver these buildings are imported, many from high labour-cost countries in Europe where high-value engineered products are profitably designed and manufactured.

The opportunity of high quality, locally made product is high, however a current lack of regulatory certainty discourages investment in these areas. The underlying driver for the Vancouver Economic Commission report conclusions is the trajectory in place for building performance between now and 2032; the BC Energy Step. https://energystepcode.ca/

While national building standards are set through the National Construction Code NSW has been going it alone for residential buildings since the introduction of BASIX in 2004. Legislating a trajectory for energy performance increases is well within the bounds of the current framework. This has the ability to deliver on economic growth opportunities while addressing building quality issues, improving environmental outcomes, increasing resilience and assist the State in meeting the Government's target of net zero emissions by 2050.

Many of the buildings that will be standing in 2050 are not yet built. It will be significantly easier to meet the Net Zero target if those buildings are built to a Net Zero standard.

The current focus of regulatory change on ROI (Return on Investment) appears to ignore or discount the co-benefits of improved standards while over-estimating the costs. Global evidence suggests that market economies respond well to certainty and targets and find innovative ways to deliver what is required; if the answers were known at the outset then innovation would not be required.

4. Recommendations

APHA recommends the NSW government legislate a trajectory for building performance for the economic, environmental and social reasons outlined above. These increased standards will ensure homes that are built in coming years are easily able to meet the NSW Governments 2050 Net Zero target.

We further recommend that the Passive House Planning Package be recognised within the BASIX framework as a method of meeting the legislative requirements.

Contact

Please email [redacted] & admin@passivehouseaustralia.org to initiate further discussion.

APHA looks forward to being able to contribute to this issue in the future, and would like to thank the NSW Productivity Commision for the opportunity to make a submission on this important issue.

Yours sincerely.

Chairperson

Appendix A

AUSTRALIAN PASSIVE HOUSE ASSOCIATION

1 Introduction

This document is intended to explain the Passive House Planning Package (PHPP), the software the underpins the Certification of Passive House buildings globally. It contains some suggestions as to how the PHPP could be integrated within BASIX to provide a reliable compliance pathway. The aim being to avoid the unnecessary duplication of work currently faced by projects in completing a NatHERS assessment in addition to the thermal modelling through PHPP.

2 Passive House Planning Package

The PHPP is an Excel based modelling tool that accurately predicts building performance. It has been in use for over 25 years. Research has shown a very strong correlation between predicted performance and real world performance.

2.1 PHPP Functionality

PHPP uses current climate data, building geometry, construction systems and site information to predict building performance. The tool reports heating and cooling demands and loads. It also takes into account appliances, heating/cooling systems, hot water systems, renewable energy production and lighting.

2.1 PHPP accuracy

The PHPP has been validated against ASHRAE140. The US Department of Energy fund the standard and describe it thus:

> *ASHRAE Standard 140 "Standard Method of Test for Building Energy Simulation Computer Programs" aims to increase confidence in the use of building energy modeling (BEM) by creating standardized and citable test procedures for validating, diagnosing, and improving the current generation of BEM software.*

2.2 Access to PHPP

The Passive House Planning Package (PHPP) is available to anyone who purchases the software. It is low cost at $320+GST.

2.3 Who can use PHPP

Anyone with access to the software is able to use it. However, it is proposed that for the purpose of BASIX only a Certified Passive House Designer would be permitted to submit a completed PHPP for compliance purposes.

2.4 PHPP reporting

The Passive House certification process is via an online platform. The Certification Platform requires the designer to upload their PHPP Excel file along with all construction documentation for assessment by the PH Certifier.

For this reason the Excel based tool does not generate a certificate. For the purpose of BASIX the Certified Passive House Designer (CPHD) could generate a multipage PDF that contains all of the information; this would be adequate for any auditing and quality assurances processes that may be required.

2.5 Quality Assurance & Compliance

The robust nature of the PHPP and the CPHD training course and exam would provide similar (or higher) quality assurance as the current NatHERS, ABSA, BDAV approach. The risk to CPHD of providing inaccurate or misleading information would be low due as it would breach their Professional Indemnity insurance requirements for their professional behaviour.

The compliance of the finished building with the plans and PHPP would not be able to be proven until construction is complete. If BASIX evolves to require some form of As Built certification the Passive House Certification process would be well suited to demonstrating that compliance.

In terms of the current iteration of BASIX, the risk of the As Built form not complying with BASIX documentation remains the same i.e. possible. However, if a project is seeking Passive House Certification it will need to meet the air tightness requirements (0.6ACH50), it is highly unlikely that the building would achieve this level and not also comply with the other Passive House design requirements.

3 Certified Passive House Designers

Australia currently has around 120 Certified Passive House Designers (CPHD). The number of CPHDs is increasing at arounds 25% per year.

To become a CPHD you must pass a rigorous 3 hour exam. The vast majority of people (both in Australia and overseas) take the exam at the end of a 10 day full time training course. The exam covers all aspects of building physics, design, climate responsiveness, heating, cooling, shading, and the economics of Passive House construction.

Once certified a designer must then maintain their accreditation on a 5 yearly cycle through the completion of a certified Passive House project.

More information on the CPHD process can be found here:
https://passipedia.org/education_training/certified_passive_house_designer

4 BASIX commitments

The current formatting of the BASIX certificate to communicate the commitments could work equally well for a project using the PHPP. The thermal comfort section of the BAISX certificate could refer to the submitted PHPP in the same way the BASIX certificate currently refers to the ABSA certificate.

As PHPP does take into account hot water, lighting, heating & cooling systems (if needed) and photovoltaic generation it has the potential to cover all of the BASIX commitments through one process. While we see this as being a desirable future outcome our initial focus is upon avoiding the unnecessary duplication of thermal modelling through both PHPP and NatHERS.

5 PHPP and NatHERS

One of our members, [redacted] is a Passive House certifiers, he is also an ABSA assessor.

[redacted] has provided some projects which have been modelled in both PHPP and First Rate 5. The comparisons can be seen in Appendix A.

He has also recently had a project approved in the Act without requiring NatHERS modelling. The letter of explanation used with the building certifier is in Appendix B.