AAQG submission: Draft Design and Place SEPP
Urgent need for Better Building Standards & Regulation in NSW

This submission on the draft Design and Place SEPP explains the considerable benefits of requiring much better building standards than the current version of BASIX, and also allowing councils the flexibility to set even higher standards when this results in significant benefits for the local community.

Benefits of better standards – more people die in Australia from heatwaves than any other natural disaster – Australia's rate of cold-associated deaths double that of Sweden

A coalition of 61 community organizations backed a report '*All Australians deserve a Healthy, Safe, Affordable Home*'(**AADHSAH,** July 2019)[1] explaining why better standards are important: *"**Australian building efficiency standards lag behind other major economies, leaving many Australians living in homes that are damp, too cold in winter or too hot in summer. More people die in Australia due to heatwaves than any other natural disaster, while our rate of cold-associated deaths is double that of Sweden**. In attempting to mitigate the impact of poor quality housing, many people are accumulating increasingly unaffordable energy bills. As a result, too many people face the difficult choice between cutting back on energy use to the detriment of their family's health and safety or going without other essential services such as food and medicine to afford energy bills. In some cases, people are forced to pay the energy bills over paying rent on time and end up homeless*.
Source: https://renew.org.au/wp-content/uploads/2019/07/Community-Joint-Statement-for-Healthy-Affordable-Homes.pdf

The AADHSAH report outlines the considerable benefits of better building standards:

1) Lower energy bills "*One off investment in energy efficiency could provide annual savings from $289 for apartments to $1,139 for houses annually….Increasing the current 6-star efficiency standard for new homes and improving appliance efficiency standards could cut average annual energy costs by up to $900 per household*."

2) Improved health and well-being "*A recent international study concluded that **more people die from the effects of chronic cold in Australia than in Sweden** – largely due to the poor energy performance of our homes There is a moral imperative to act to improve the energy efficiency of existing homes, not just to prevent deaths and health impacts, but to reduce pressure on health services and budgets."*

3) Economic stimulus and job creation. "*Energy efficiency is already a major job creator in Australia. Recent analysis found that implementing basic improvements to Australian homes and businesses would create a more than 120,000 job years of work. Energy bill savings freed up for spending elsewhere in the economy contribute to further economic stimulus and job creation.*"

4) Improved resilience of the electricity system. "*Australian homes account for around 24% of electricity demand – even more in peak periods such as heatwaves. Where both network investment and wholesale energy prices are driven by periods of peak demand, reducing demand by improving efficiency can reduce the need for costly network and generation investment resulting in lower prices for all, while also reducing the risk of blackouts at peak times.*"

5) Low-cost emission reductions. "*Homes contribute more than 11% of Australia's greenhouse emissions. Reducing building sector emissions could deliver 28% of Australia's 2030 emissions reduction target at **low to negative cost**, as efficiency investment generates bill savings by reducing waste. Failing to capture low-cost opportunities in the building sector will increase the cost of meeting commitments, by requiring potentially higher cost reductions in other sectors of the economy.*"

6) Social equity "*People on low incomes, renters and social housing tenants are more likely to live in poor quality housing and rely on inefficient appliances that are cheap to buy, but expensive to run … Renters face a 'split incentive' whereby landlords have little incentive to invest in efficiency because the benefits largely go to tenants.*"

7) Reduced homelessness. "*High energy bills can contribute to cost of living pressures and an increased risk of homelessness for people on low incomes, particularly for those who rent their homes who face difficult choices between paying utility bills and rent.*"

Missed opportunities cost us $1.1 billion

Renew Economy highlighted the cost of inaction in not requiring healthy, energy-efficient homes: "M*issing the opportunity to raise energy standards in the 2019 National Construction Code has already locked in an*

estimated $1.1 billion in unnecessary household energy bills for Australian households and 3 million tonnes of additional emissions by 2050. Missing yet another opportunity in 2022 will compound these costs to consumers, at a time when household bill savings are most needed to offset rising energy prices and stimulate household spending and wider economic activity." https://renew.org.au/our-news/we-need-healthy-homes/

Why current BASIX requirements are inadequate

The energy costs of new homes in NSW are substantial, especially in regional areas that do not enjoy Sydney's relatively mild climate. The AADHSAH report explains: "***Industry leaders are already building higher performing homes with annual energy bills less than $500 per year (and often less than zero), with savings in the order of $2k to $3k per year for as little as $6,000 additional cost (often much less)***".

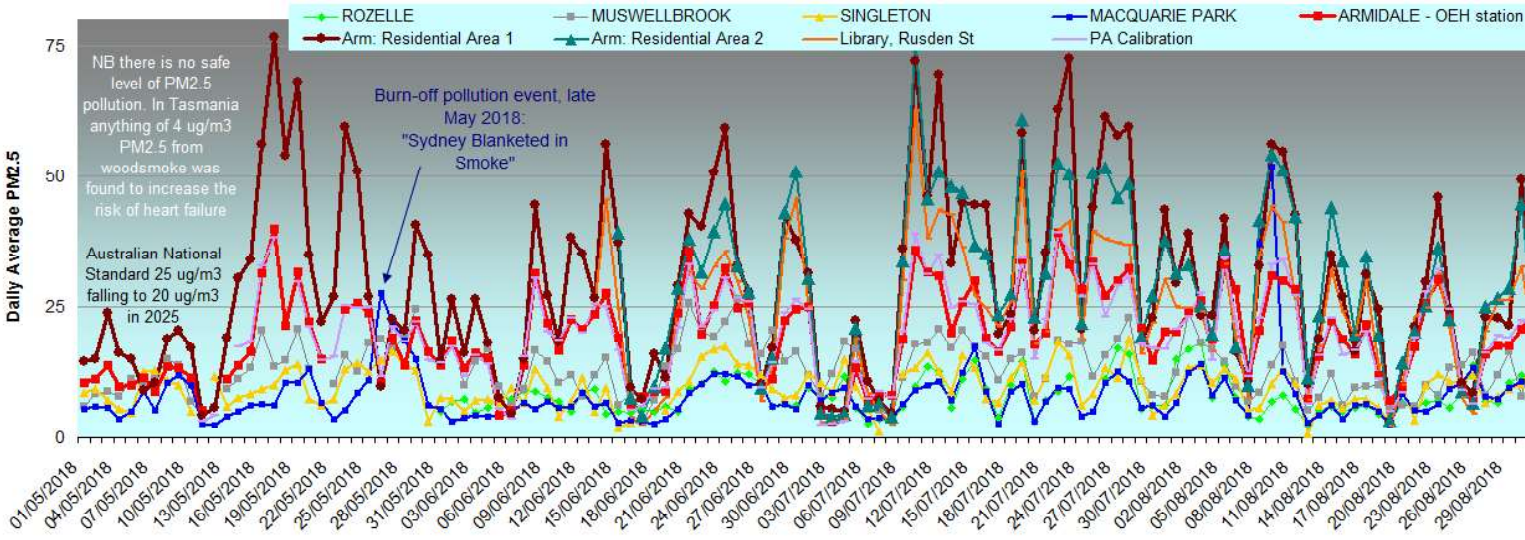
Prospective purchasers do not have enough information about energy costs, so cannot make an informed choice. This market failure is best addressed by regulation. As well as benefits to consumers of reduced energy and water bills, improved water efficiency would reduce the financial risk to local councils of incurring substantial costs to truck water during droughts.

Some residents also turn to wood heaters, thinking they might represent a cost-effective alternative, not realizing the climate impacts over the next 20 years (the critical period if we are to achieve the Paris target of keeping global warming well below 2 degrees) that the methane, black carbon, carbon monoxide and CO_2 emissions from a typical home using a wood heater will cause more global warming than 25 to 50 homes using an efficient heat pump, see http://woodsmoke.3sc.net/ghg#GW20

Modern, efficient reverse cycle heat pumps or heater-air-conditioners move the sun's warmth from outside to inside homes; they are now the cheapest and most environmentally friendly heating with substantially lower running costs than buying firewood. Some years ago, Christchurch's Clean Heat Project replaced wood-heating in 1,973 households with heater-air-conditioners (and improved insulation where needed); the average increase in electricity use was just 1%. Households that removed open fires used less electricity, offsetting an 8-10% increase in households that replaced free-standing wood-heaters.[5] Efficient modern units can deliver 5 kW of heat for each kW of electricity they use (equivalent to at least 80% renewable energy) and have convenient thermostatic controls.

The community health costs of air pollution from woodsmoke, now estimated to amount to thousands of dollars per wood heater per year, would also be reduced.

A peer-reviewed paper (Borchers-Arriagada, 2020) reported estimated health costs of wood heating in Tasmania at $4,232 per wood heater per year.[2] In Armidale, NSW These results are similar to a peer-reviewed analysis for Armidale, NSW of estimated health costs of over $4,000 per wood heater per year.[3] Similar costs are expected for other regional towns in NSW that are affected by a build-up of wood smoke pollution.



Fine particles less than 2.5 millionths of a metre (known as $PM_{2.5}$) are generally considered to be the most health-hazardous air pollutant. The particles are so small they behave like gases and enter homes even when all doors and windows are closed. $PM_{2.5}$ penetrate the deepest recesses of our lungs where they can pass into the bloodstream and transport toxins to every organ of the body and cause inflammation. As well as lung diseases, $PM_{2.5}$ pollution has been linked to heart attacks, strokes, dementia, cancers, diabetes, still and premature births,

cot deaths, genetic damage in babies and behavioural problems such as autism, attention deficit and reduced IQ when children start school.

A 2018 policy forum paper published in the journal Science, Dr. Joshua Graff Zivin, professor at the School of Global Policy and Strategy and the Department of Economics at the University of California San Diego, noted: "*There are a range of studies now that have shown that even a short amount of exposure to modest levels of pollution in utero and the first year of life leads to demonstrable impacts on intellectual performance on standardized tests in middle school, in high school … We also find from other studies that we even see the imprints of that exposure 30 years later on the earnings of workers. … Those same impacts at more subtle levels simply impair our ability to do every day tasks*".

There is no safe level of $PM_{2.5}$ pollution. A recent study of woodsmoke pollution in Tasmania found that hospital admissions for heart disease start to increase as soon as $PM_{2.5}$ pollution exceeded 4 ug/m^3. The current Australian Standard requires daily average $PM_{2.5}$ pollution to be less than 25 ug/m^3, with a stricter standard of 20 ug/m^3 to apply from 2025. The NSW Government Air Quality Monitoring Station in Armidale (red line on graph) recorded 31 exceedances of the 25 ug/m^3 standard from May to August 2018, with one residential area recorded 63 exceedances and other locations in Armidale (Residential Area 2 and the Library, Rusden St) also suffering many exceedances of the standard.[4] By contrast, there were few exceedances at Rozelle and Macquarie Park, Sydney or the Hunter Valley mining towns of Muswellbrook & Singleton.

Climate Emergency

Several NSW councils have expressed concerns about global warming or even declared a climate emergency. One way to mitigate and adapt to global warming is to make new buildings energy and water efficient. This will make them more comfortable and reduce the cost to the occupants of water, heating and cooling, especially in regional areas currently affected by droughts, and those with higher heating or cooling costs than the Sydney Metropolitan Area.

Conclusions

Current regulations are grossly inadequate, especially BASIX requirements for water and energy efficiency in regional areas.

Allowing local councils to set better standards for energy and water efficiency than required by BASIX, even after the introduction the stricter standards envisaged by the draft Design and Place SEPP, would help make new buildings and developments more suited to the local environment, reduce their contribution to global warming, decrease energy and water bills, improve community health and increase the comfort of those who live or use the buildings for decades to come.

Additional Information

1 Coalition of 61 community organizations report '*All Australians deserve a Healthy, Safe, Affordable Home*'(**AADHSAH,** July 2019). The organizations include ACOSS, Choice, Consumer Action, Shelter, St Vincent de Paul, Uniting Communities, Brotherhood of St Laurence and the Salvation Army. Available at: https://renew.org.au/wp-content/uploads/2019/07/Community-Joint-Statement-for-Healthy-Affordable-Homes.pdf

2. *Borchers-Arriagada, N., et al. (2020). "Health Impacts of Ambient Biomass Smoke in Tasmania, Australia." International Journal of Environmental Research and Public Health **17**(9): 3264.*

3 *Robinson, D. L., Monro, J.M., Campbell, E.A. (2007). "Spatial variability and population exposure to $PM_{2.5}$ pollution from woodsmoke in a New South Wales country town." Atmospheric Environment **41**: 5464–5478.*

4 *Robinson, D. L. (2020). "Accurate, Low Cost PM2.5 Measurements Demonstrate the Large Spatial Variation in Wood Smoke Pollution in Regional Australia and Improve Modeling and Estimates of Health Costs." Atmosphere 11(8): 856. https://www.mdpi.com/2073-4433/11/8/856*

5 *Robinson, D.L., Woodsmoke: Regulatory failure is damaging public health. Air Quality and Climate Change, 2014. **48**(4): p. 53-63.*