

Sat 21/05/2022 10:48 AM

[BULK] Take the Survey Form Submission

There has been a submission of the form Take the Survey through your NSW Environment Protection Authority website.

**Name**

Denise Morden

**Organisation or business name**

Denise Morden

**Position (job title)**

director

**email address**

[REDACTED]

**Which stakeholder group best describes you?**

Non-government organisation (NGO)

**Do you support extending the summer petrol volatility period from 15 November - 15 March to 1 November - 31 March?**

strongly support

**Do you support the transition period (by 2025 to 2030) for these older activities and plant to meet more stringent emission limits?**

strongly support

**Do you support expanding the geographic area in which controls apply for the storage and transfer of volatile organic liquids to include the greater Newcastle and Wollongong metropolitan areas, so they are included in the area that requires petrol vapours to be captured during transfer of petrol between underground storage tanks and road tankers (the stage one zone in the Clean Air Regulation)?**

strongly support

**Do you support the proposed new tightened emission limits and control requirements for all volatile organic liquid storage tanks, loading plant and tank vehicles regardless of age?**

strongly support

**Do councils wish to amend their listings in Part 1, 2 and 3 of Schedule 1 to provide different levels of control of burning of vegetation and domestic waste in their local government areas?**

YES

**Do you have any other comments on the remake of the Clean Air Regulation?**

STOP URBAN WOOD FIRES NOW

**What do you think are the most important sources of air pollution to address in Sydney?**

car fumes wood fires fire pits burning vegetation

**What do you think are the most important sources of air pollution to address in Newcastle?**

vechile fumes wood stoves fire pits burnoffs

**What do you think are the most important sources of air pollution to address in Wollongong?**

car fumes wood fires fire pits burning vegetation

**What do you think are the most important sources of air pollution to address in the Greater Metropolitan Region?**

car fumes wood fires fire pits burning vegetation sugar cane spraying weeds crops

Thu 2/06/2022 11:21 AM

VICTIMS OF Wood stove Smoke Pollution in Urban areas.

I wish to add this letter sent to my local council to my submission.

Nothing has been done to remedy the situation.

PLEASE CHANGE THE LAW!!!!

**From:**

Denise Morden [REDACTED]  
[REDACTED]

Mobile [REDACTED]

**Subject: Wood stove Smoke Pollution in Urban areas.**

**Date:** 1 July 2021 at 11:56:13 am AEST

**To:** [REDACTED]  
[REDACTED]

**Cc:** [REDACTED]  
[REDACTED]

To; Byron Shire Council, The Mayor Cr. Michael Lyon, Councillors and The General Manager.

[REDACTED] File No:219270x30.2021.4762.1/# A201/18392

RE; Submission 25/05/21 Air Pollution from a Wood Stove.

Dear Byron Shire Councillors,

**The law needs to be urgently changed on wood fires in urban areas due to widespread health and environmental smoke pollution.**

Currently we have lodged a complaint with Byron Council about a house owner whose wood-heater smoke in a dense suburban close, is badly affecting myself and other older neighbours with heart and lung problems, with the air, in and around our homes, constantly filled with smoke.

I suffer from genetic lung disease, ALPHA 1, heart disease and asthma, so Smoke Pollution is life threatening for me.

Smoke pollution is costing me my health, accelerating my lung damage, and costing in weekly visits to the doctor recently because of it, plus the cost of having to use air conditioning for air exchange, which is ineffective against smoke particles.

We cannot open any windows before 10 am and after 4pm, or go outside at all, because there is smoke all around us and up and down the street, all night and some mornings.

We cannot enjoy our homes, our gardens or hang out washing because of the smoke smell and embers.

Having to live with these restrictions is severely impacting and restricting our health and quality of life, affecting my mental and physical health.

As well as at least 5 other neighbours we know of, have complained of the smoke and are badly affected. Some have with children with developing lungs and there is a kindergarten and childcare centre in the next street.

Children are particularly vulnerable, as early exposure can have long term, irreversible negative impacts on respiratory function. Smoke Pollution has also been linked to developmental problems in children, as well as premature labour and low birth weight.

This is a major concern, as Wood smoke doesn't necessarily drift up into the air and dissipate because it is known that the invisible, ultra-fine particles from wood burning can remain suspended in the air for many hours and even days, depending on weather conditions.

**Poor air quality is BAD for EVERYBODY, for the whole community.**

Particle pollution or PM, causes adverse health effects, after both short and long-term exposure.

Inhaled, particulate matter PM2.5 and PM10, is small enough to enter the lungs and bloodstream, affects the heart and lungs and causes serious health effects with an increased rate of cardiovascular and respiratory diseases, disease progression and a reduction in life expectancy.

Evidence shows there is no safe level of PM2.5 (the most hazardous air pollutant) and exposure is associated with a range of serious respiratory health outcomes, with mortality and linked to higher rates of cancer, heart disease, stroke, dementia and asthma, and reduced lung function development.

Wood smoke contains similar chemicals to tobacco smoke, (PAH) a carcinogen with ozone, aldehydes, plus a whole lot of co-pollutants and gases as a result of incomplete combustion, which are detrimental to public health.

Using a wood stove for a single day emits as many PAH as in the smoke from over half a million cigarettes.

Wood smoke pollution should not be allowed in dense urban areas where many people's health is threatened by the Air pollution of just a few wood stoves.

**Surely It is a basic human right to have clean air as opposed to the right of one person to threaten the health of many households, as in this case?**

As suggested by council, I put a note in owner of the wood heater's letterbox, respectfully informing her of how badly the smoke affecting us, and asking respectfully, that she checks her stove, chimney or fuel according to the EPA guidelines I provided. [REDACTED]

But, my plea was ignored. She doubled her efforts and is now lighting the fire twice a day, with the chimney belting out smoke for hours on end.

She was first reported last winter, and it seemed better after council contacted her, but this winter the smoke has been unbearable since April, when it got cold.

The onus has been put on us by council to supply dates, photos and videos of the smoke and we have done our best but I am on oxygen and use a walker so I cannot move around easily or run outside and take photos all the time.

Sometimes Its hard to see the smoke, but you can smell it-all night and every morning.

The EPA guidelines that suggest chimneys need to be emitting visible smoke for more than 10 minutes, and more than 10 metres high, are a major problem as Smoke is difficult to photograph and detect, especially at night, when fires are typically lit.

It IS also difficult for old and frail people to be running round taking photos and videos at all hours.

A neighbour who is getting the smoke directly in her backyard has supplied dates, photos and videos and had to set up a tripod to take photos from different angles and times.

So it is disheartening to hear that for all our efforts, the most the offender can be fined is \$200 and perhaps a \$3,000 fine, for failing to comply after 21 days after an abatement notice, and this 'may' up in court.

This is a slow process given that in 3 weeks or longer the winter will be over, but meanwhile we have to endure the daily lung damage and stress this is causing.

We Really appreciate how the Council Environmental Officers are doing their best within the EPA guidelines, and their limited powers, and but this is just ridiculous.

I urge Byron Shire Council as a 'Green' council to use its all its power to remedy this situation for the greater good of the community and Enforce the regulations on local air quality issues and complaints.

Byron Council Environmental Officer says many complaints are made about smoke pollution every winter in Byron shire.

#### **Wood fires should be banned in urban areas.**

Thousands of complaints are made Country Wide, while surveys show most People,77%, want them banned in urban areas AND that Most Australians support government action to phase out this polluting form of heating, according to a recent studies. [Asthma Australia]

'Comprehensive analyses of the sources of air pollution have been conducted in Sydney, where 46% of population-weighted exposure to PM2.5 (the most hazardous air pollutant) is from wood heaters, despite only 4.4% of Sydney households using wood as main heating.'

There is a call to action by other health experts, The Australian Medical association, the Lung Foundation and many others to phase out wood heaters in residential areas because of smoke pollution, lung damage and other health concerns.

This adds up to billions of dollars worth of health care costs every year.

This fact WRONGLY dismissed by NSW Environment Minister Matt Kean, who claims 'a state-wide ban is not supported by the wider community and that wood heaters are viable and cost-efficient for many people,in rural areas and low socio-economic groups' who ultimately bear the brunt of more cost in health care.

This attitude of placating the rural sector and wood heating industry as a priority over the health of the public, and particularly the failure to protect the most vulnerable members of our society, is in line with the Government priority, which is money, votes and business as usual and shows once again, how Australian governments are reluctant to put public health first when confronted with a popular product and a large profitable industry.

We have no faith in Federal and State Governments or the EPA, who have failed us, in their duty of care a for the weak old, and sick who bear the brunt of higher health costs and a shorter life expectancy.

The NSW clean air strategy has failed me with the EPA abdicating this regulation to Councils and with disgraceful and ridiculous rules regulations and impossible tasks that make enforcement impossible and favour the offender over the offended.

We are being killed by the policy of not imposing bans on wood heaters in dense suburban areas where wood heaters are used by just 5% of households in major cities, but impact the health of the other 95% who don't use wood.

**We need action now to stop the wood smoke pollution.**

**This should take priority over someones choice to pollute and damage their lungs as well as of their neighbours who have NO choice**

SO I urge Byron Shire Council **not** to fail in their duty to those who need it most, and recognise the fundamental human right to CLEAN air and our health's dependency on the health of our environment.

To Be brave, and ban wood heaters in urban areas, or at least meanwhile, be brave, shut down and prosecute anyone who is polluting the air, as does Brisbane council which states 'that it is unlawful to cause a smoke nuisance for neighbours'.

Any help would be greatly appreciated, so we hope Byron Council will do the right thing and help us to fix this problem urgently for all its most vulnerable residents who are exposed to woodfire heaters and are largely unable to protect themselves from the smoke.

Thanks for Listening

Yours sincerely

Denise Morden.

[REDACTED]

[REDACTED]

[REDACTED]

**Save our lungs and save the trees please.**

**Air pollution drives climate change**

Long Term

I urge Council to implement a community education campaign to inform residents about the health harms of wood smoke, and environmental harms of backyard burning, and to consider phasing out the installation of new wood heaters and support people to change to non-polluting forms of heating.

Australia's environmental laws are not providing adequate protection for the environment, and it remains one of only 15 countries without the right to a healthy environment enshrined in our federal laws or constitution.

**References and facts to consider.**

"There is no safe lower level for a lot of these exposures."

Having a wood heater 'more damaging' to lungs than having a truck running in your room, experts say

"The effect on the ground for the next-door neighbour is far worse than living next to a coal-fired power station."

There is extensive evidence to show that wood smoke impacts health even at low levels, with not only neighbours affected but owners exposed to particle pollution every time they open the door to add wood.” see- ABC NewsCall due to health, environmental concerns.’

Even one modern wood heater per hectare increases by 7% the risk of non-accidental hospital emergency presentations in children under 3.

<https://www.epa.nsw.gov.au/your-environment>

<https://www.environment.nsw.gov.au/questions/smoke-from-neighbours-chimney-or-barbecue>

<https://www.epa.nsw.gov.au/your-environment/air/reducing-wood-smoke-emissions/what-you-can-do-about-wood-smoke-pollution/dos-and-donts-of-wood-heating>

<https://www.c4cleanair.net.au/quit-woodsmoke>

<https://asthma.org.au/about-us/media/public-would-support-a-phase-out-of-woodfire-heaters/>

<https://www.abc.net.au/news/2021-06-18/call-to-phase-out-wood-heaters-due-to-health-concerns/100202388>

<https://www.abc.net.au/radionational/programs/breakfast/concerns-asthma-risk-woodfire-heaters-background-briefing/13397280>

[https://www.parliament.vic.gov.au/images/stories/committees/SCEP/Air\\_Pollution/Submissions/100\\_2021.04.23\\_-](https://www.parliament.vic.gov.au/images/stories/committees/SCEP/Air_Pollution/Submissions/100_2021.04.23_-)

[The Lung Health Research Centre University of Melbourne.pdf?fbclid=IwAR1SnWS65mhj2OLfJSreqDzMWHkTGTPavH609hDaEFSWW6-YLF7vWzQnMoY](https://www.lunghealthresearchcentre.unimelb.edu.au/files/2021/04/The_Lung_Health_Research_Centre_University_of_Melbourne.pdf?fbclid=IwAR1SnWS65mhj2OLfJSreqDzMWHkTGTPavH609hDaEFSWW6-YLF7vWzQnMoY)

[https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196\(21\)00131-5/fulltext#.YMxo38PZZjQ.twitter](https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(21)00131-5/fulltext#.YMxo38PZZjQ.twitter)

<https://www.theguardian.com/environment/2021/jan/01/avoid-using-wood-burning-stoves-if-possible-warn-health-experts?>

<https://blog.lptmedical.com/the-dangers-of-wood-burning-stoves-and-fireplaces-for-people-with-copd>

<https://www.lung.ca/news/advocacy-tools/our-position-statements/residential-wood-burning>

<https://www.nhlbi.nih.gov/health-topics/alpha-1-antitrypsin-deficiency>

<https://pubmed.ncbi.nlm.nih.gov/25938284/>

WHO and UNICEF: <https://sites.google.com/view/healthy-air/>



# **Asthma Australia Submission to NSW Department of Planning, Industry and Environment**

## **Draft NSW Clean Air Strategy**

**May 2021**

### **About Asthma Australia**

Asthma Australia is a for-purpose, consumer organisation which has been improving the lives of people with asthma since 1962.

Asthma is an inflammatory condition of the airways, which restricts airflow and can be fatal. There is no cure, but most people with asthma can experience good control of their condition.

Asthma affects one in nine Australians, or 2.7 million people. It has various degrees of severity (mild to severe) and affects people of all ages, from childhood to adulthood. Asthma can appear at all ages and stages of life.

Asthma Australia's purpose is to help people breathe better so they can live freely. We deliver evidence-based prevention and health strategies to more than half a million people each year. To ensure people can access effective treatments and best practice healthcare for their asthma, we work directly with people with asthma, their family and friends, health professionals, researchers, schools and governments. This way, we can ensure people with asthma are supported with education and access to high-quality information and care where they live, work and play in all stages of life.





## Executive Summary

*“These wood-fire heaters don’t have a place in a city where people live in close proximity, just a cluster of homes with one can have a large impact on a lot of people in the neighbouring areas. I used to live in Kenthurst and every winter people in the area would be affected and complain about the smoke to the local council.”*

Sydney resident

Asthma Australia welcomes the opportunity to submit to the New South Wales (NSW) Department of Planning, Industry and Environment on the Draft NSW Clean Air Strategy (Draft Strategy). Improving air quality in NSW is essential for people with asthma, who are the metaphorical ‘canaries in the coalmine’ when it comes to air pollution. People with asthma are among the first people to be affected by air pollution in the population, experiencing respiratory symptoms and asthma flareups which can lead to hospitalisation and even death. Exposure to environmental hazards is both a risk factor for the development of asthma and a trigger for asthma symptoms in people who have asthma.<sup>1</sup>

While public attention has been drawn to high spikes in air pollution such as those seen during bushfire and hazard reduction burn events, there is no safe level of air pollution.<sup>2</sup> This means health harms can occur at low levels of air pollution and underscores the need to address all sources of air pollution adequately in the final version of the NSW Clean Air Strategy.

Addressing air pollution requires a whole-of-government approach given the range of sources of pollution and the range of areas impacted. These include human health, the environment, education, employment, the economy and social participation. Asthma Australia welcomes the NSW Government’s commitment to introducing a Clean Air Strategy and acknowledges the potential of the strategy to deliver the much-needed action to reduce air pollution.

However, despite acknowledging woodfire heater pollution as the largest contributor to fine particulate matter (PM2.5) in Sydney and many regional centres, the Draft Strategy fails to provide meaningful action to address this issue. The Draft Strategy also recognises PM2.5 is the pollutant with the greatest health impact across NSW and states reducing exposure to it will have the greatest benefit for public health. Woodfire heaters must be meaningfully addressed if the NSW Clean Air Strategy is to succeed in reducing the health impacts of air pollution. In order to achieve this end, the NSW Government must establish a subsidy scheme to support households to replace woodfire heaters with cleaner heating alternatives, similar to schemes in the Australian Capital Territory (ACT) and Victoria.

In this submission, Asthma Australia calls for a number of changes to be made to the Draft Strategy. We present findings from a representative survey of over 25,000 people, the majority of whom understand woodfire heaters have negative health impacts and are looking to governments to act to phase them out.<sup>3</sup> We also propose actions for the NSW Clean Air Strategy to reduce the health impacts of hazard reduction burning and improve compliance with and enforcement of air pollution regulation. Further, in this submission we provide a number of recommendations to support people with asthma and others vulnerable to air pollution to minimise the impacts on their personal health, including supporting an AirSmart public education campaign and prioritising improved air quality monitoring as a standalone area in the NSW Clean Air Strategy. Finally, Asthma Australia recommends the NSW Clean Air Strategy recognise that air pollution impacts are amplified by the social determinants of health and address health inequities which limit the ability of vulnerable people to protect themselves.



## Asthma in NSW

Asthma is a chronic respiratory condition affecting 10.7% of people in NSW, or more than 829,100 people.<sup>4</sup> Indigenous Australians in NSW are twice as likely to have asthma compared with non-Indigenous Australians.<sup>5</sup> In NSW, the Local Health Districts with the highest asthma prevalence among children are Murrumbidgee (20.5%), Nepean Blue Mountains (18.2%) and Hunter New England (16.4%). The highest asthma prevalence among adults is in Southern NSW (21.1%), Western NSW (19.3%) and Nepean Blue Mountains (18.9%).<sup>6</sup>

Asthma was responsible for 160 deaths in NSW in 2019.<sup>7</sup> Indigenous Australians in NSW experience higher asthma mortality rates than non-Indigenous Australians (2.2 times higher between 2014-2018).<sup>8</sup>

Asthma places a significant burden on NSW hospitals. There were 11,290 hospital admissions for asthma in NSW in 2018/19.<sup>9</sup> In 2016/17, 28,682 people in NSW attended an emergency department for their asthma.<sup>10</sup>

### The personal impact of air pollution in NSW:

*"I have severe eosinophilic asthma and the woodfire smoke is just another unavoidable irritant that causes me flareups. I grew up in Armidale, NSW which is a synonymously cold place, it's in a valley on top of a mountain and the smoke from woodfires sits there in winter creating a haze over the city and causing a lot of grief for asthmatics and those with respiratory issues.*

*"I was hospitalised many times due to my Asthma when I lived in Armidale, but I thought once I moved to Sydney that things would be better. I moved several years ago into a unit block that is next to an old heritage house. I live on the second floor that looks out to their roof and during winter the smoke from their wood-fire is unbearable.*

*"We have blocked out the air vents in our unit and rarely open the windows during wintertime, but the smoke is still unavoidable and unnecessary. Sydney is a high-density city where heating is only required for a small portion of the year, yet we still allow people to burn wood fires, it's absurd."*  
Sydney resident



## Summary of recommendations

RECOMMENDATION 1: The NSW Clean Air Strategy should include actions to phase out woodfire heaters in NSW, including:

- (a) Introducing a woodfire heater replacement scheme to subsidise the cost to households of replacing woodfire heaters with efficient reverse cycle air conditioners.
- (b) Prohibiting installation of woodfire heaters in new homes.
- (c) Requiring woodfire heaters to be removed when a home is sold.

RECOMMENDATION 2: The NSW Clean Air Strategy should include actions to minimise smoke emissions from remaining woodfire heaters while efforts are underway to phase them out, including:

- (a) Working with local governments to enforce environmental regulations by investigating reports of excessive woodfire heater smoke, educating individuals around reducing emissions and issuing infringement notices when needed.
- (b) Implementing an education program to minimise the health impacts of woodfire heater emissions in areas where they are problematic.

RECOMMENDATION 3: The proposed action in the NSW Clean Air Strategy to reduce the impacts of hazard reduction burn smoke should be strengthened to specify:

- (a) A review of hazard reduction practices with a focus on increasing non-burning options such as mechanical fuel load reduction, particularly around settled areas;
- (b) The inclusion of health organisations and a consumer representative in hazard reduction burn planning so health impacts are fully considered;
- (c) Provision of health messages to the community ahead of planned burns with as much notice as possible; and
- (d) Staggering hazard reduction burns where possible in order to minimise the likelihood of prolonged periods of poor air quality.

RECOMMENDATION 4: The NSW Clean Air Strategy should include air quality monitoring and public information as a standalone priority area.

RECOMMENDATION 5: The proposed actions in the NSW Clean Air Strategy to improve air quality monitoring in NSW should be strengthened by:

- (a) Recognising the need for local air quality monitoring in areas with problematic woodfire heater smoke;
- (b) Committing to installing permanent air quality monitoring stations in all communities near major industrial pollution sources; and
- (c) Committing to increasing the number of portable air quality stations that can be deployed during air pollution events.

RECOMMENDATION 6: The NSW Clean Air Strategy should recognise the importance of compliance with and enforcement of air pollution laws and regulations and the need to adequately resource the NSW Environment Protection Authority.

RECOMMENDATION 7: The NSW Clean Air Strategy should recognise the need to fund the development and implementation of an AirSmart public education campaign to reduce the health impacts of air pollution by empowering people to minimise their exposure, including:

- (a) Year-round information to improve environmental health literacy;
- (b) Targeted information for people with asthma and other pre-existing health conditions on actions to take to prepare for such events; and
- (c) Increased messaging during air pollution crisis events such as bushfires.



RECOMMENDATION 8: The NSW Clean Air Strategy should recognise the need to provide targeted information about the adverse health impacts of poor air quality for people who are at greater risk, including people with asthma, people from culturally and linguistically diverse backgrounds, people with low literacy or reading skills and people who lack access to digital tools.

RECOMMENDATION 9: The NSW Clean Air Strategy should recognise the inequitable impacts of air pollution in NSW and propose actions that address the social determinants of health, including additional investment in infrastructure such as quality affordable housing and public transport.

RECOMMENDATION 10: The NSW Clean Air Strategy should recommend the provision of support to vulnerable people to make their homes resilient to air pollution, for example, support to seal homes and contribute to the costs of air purifiers and air conditioners. *(Refer to Recommendation 13 which addresses air purifiers.)*

RECOMMENDATION 11: The NSW Clean Air Strategy should propose an action to develop frameworks that will enable local schools, workplaces, sports associations and public buildings to respond to air pollution events, including support for upgrades to reduce indoor air pollution and guidelines for responding to air pollution

RECOMMENDATION 12: The NSW Clean Air Strategy should propose the establishment of a feasibility study into options to protect people from air pollution, including an assessment of whether to establish a clean air shelter program which would designate public buildings that meet clean air criteria.

RECOMMENDATION 13: The NSW Clean Air Strategy should recognise the need to provide financial support to people of low socio-economic status with asthma towards the costs associated with using air purifiers with a HEPA filter. *(Refer to Recommendation 10 which addresses making homes resilient to air pollution.)*



## Reducing pollution from woodfire heaters

*"I don't know why [woodfire heaters] haven't been totally banned in residential areas in major cities and large towns, my mother lives in Tamworth and when I was there in July, the smoke from the wood-fire heaters was so bad, luckily I don't have asthma but it still made me unwell with a headache and sore throat."*

Newcastle resident

The Draft Strategy recognises fine particulate matter, or PM2.5, as the pollutant with the greatest impact on health across NSW and that reducing exposure to it will have the greatest benefit for public health. It states, "wood smoke from home wood heaters is the major contributor to fine particle pollution and air pollution impacts on community health in Sydney and many NSW regional centres." The Draft Strategy cites research estimating woodfire heater emissions contributed to 100 deaths in the Greater Metropolitan Region of Sydney in 2010-11.

Asthma Australia welcomes the recognition of woodfire heaters as a priority area for action in the Draft Strategy. However, we are disappointed that the Draft Strategy proposes just three actions to reduce woodfire heater smoke impacts. We note that, in contrast, the other 4 priority areas each have between 9 and 14 actions. In addition, we consider that the proposed woodfire heater actions are weak insofar as they do not propose material action, but propose guidance for councils, reviewing planning instruments and researching health impacts. These actions will not meaningfully reduce the substantial health impacts detailed in the Draft Strategy. The Clean Air Strategy must include strong actions to phase out woodfire heaters and research shows such actions have strong public support.

A representative survey of over 25,000 people commissioned by Asthma Australia found most people support the introduction of regulations to reduce the impact of woodfire heaters.<sup>11</sup> More than three-quarters of the general population (77%) agree woodfire heaters should not be allowed in urban or built-up areas and over half agree they should be phased out (55%) or banned (54%). Support for regulation is even higher among people with asthma with 84% supporting regulation of woodfire heaters in urban or built-up areas, 71% supporting a scheme to phase them out and 65% agreeing they should be banned. Support for regulatory methods is much stronger than support for community education to ensure people know how to correctly use and reduce smoke from their woodfires, with only 37% of the general population and 50% of people with asthma agreeing with community education.

This strong support for phasing out woodfire heaters reflects widespread understanding in the community that woodfire heaters are harmful to health. In Asthma Australia's survey,<sup>12</sup> 75% of the general population agree woodfire heaters can cause health impacts for certain people, and 55% recognise woodfire heaters cause health problems for the general population. Unsurprisingly, people with asthma are twice as likely to report experiencing respiratory symptoms when exposed to woodfire heater smoke compared to the general population. This is compounded by the fact most people do not feel they are able to reduce their exposure to smoke: only 28% of the general population and 18% of people with asthma said they are able to protect themselves from woodfire heater smoke when present.<sup>13</sup>

In addition to the consumer research showing strong public support for a scheme to phase out woodfire heaters, Asthma Australia notes a Policy Impact Assessment prepared for Victoria's Environment Protection Authority found accelerating replacement of existing woodfire heaters was by far the most effective intervention to avoid particulate matter emissions. The 2017 assessment



calculated the health costs of woodfire heater emissions and the benefits of various regulatory interventions to reduce emissions.<sup>14</sup> It quantified the total health costs of woodfire heater emissions at more than \$8 billion over 10 years,<sup>15</sup> and found accelerating replacement would have the greatest net benefit of the interventions assessed, estimated at over \$462 million.

Asthma Australia also notes the Victorian Government recently announced a funding measure which will subsidise the cost of replacing woodfire heaters, along with old gas and electric heaters, with energy efficient alternatives. This measure is targeted to low-income households and is part of a household energy efficiency package.<sup>16</sup>

In the ACT, the Actsmart Wood Heater Replacement Program offers financial incentives to remove and dispose of woodfire heaters with the aim of improving Canberra's air quality.<sup>17</sup> Rebates range from \$250 to remove or decommission a woodfire heater to \$1250 to remove a woodfire heater and install a ducted reverse cycle air conditioning system.

The NSW Clean Air Strategy should include as a proposed action the introduction of a woodfire heater replacement subsidy scheme, similar to the schemes in Victoria and ACT. This is an essential measure to support households to transition away from harmful woodfire heaters.

Further actions should be proposed for areas where woodfire heater smoke is problematic such as prohibiting installation of new woodfire heaters and requiring woodfire heaters to be replaced when a home is sold.

Finally, the proposed action in the Draft Strategy regarding empowering local governments to better manage smoke from woodfire heaters needs to be strengthened to specify that local governments should be supported to enforce environmental regulations. Even in a strengthened form, this action can only be viewed as a transitional step while efforts are underway to phase out woodfire heaters.

**RECOMMENDATION 1: The NSW Clean Air Strategy should include actions to phase out woodfire heaters in NSW, including:**

- (a) Introducing a woodfire heater replacement scheme to subsidise the cost to households of replacing woodfire heaters with efficient reverse cycle air conditioners.**
- (b) Prohibiting installation of woodfire heaters in new homes.**
- (c) Requiring woodfire heaters to be removed when a home is sold.**

**RECOMMENDATION 2: The NSW Clean Air Strategy should include actions to minimise smoke emissions from remaining woodfire heaters while efforts are underway to phase them out, including:**

- (a) Working with local governments to enforce environmental regulations by investigating reports of excessive woodfire heater smoke, educating individuals around reducing emissions and issuing infringement notices when needed.**
- (b) Implementing an education program to minimise the health impacts of woodfire heater emissions in areas where they are problematic.**



## Reducing the impacts of hazard reduction burn and bushfire smoke

Asthma Australia welcomes the recognition of the health impacts caused by smoke from hazard reduction burns and bushfires in the first priority area of the Draft Strategy. However, the proposed actions need to be strengthened. Asthma Australia provides a number of recommendations later in this submission which would reduce the health impacts of bushfire smoke, including improving air quality monitoring reporting, the need for an AirSmart public education campaign, and measures to support individuals and communities to minimise the health impacts. In this section, we focus on hazard reduction burn smoke impacts and air quality monitoring and information.

### Strengthening the proposed actions to address hazard reduction burn smoke impacts

Smoke pollution from hazard reduction burns can be extremely dangerous for people with asthma and can lead to life-threatening symptoms. Research into the impact of hazard reduction burning in the greater Sydney region in May 2019 estimated the resulting 5-day period of hazardous air quality in Sydney led to 14 premature deaths of people with respiratory and cardiovascular disease.<sup>18</sup> An Asthma Australia survey of 550 people from areas affected by the sustained hazardous air quality found four out of five respondents reported experiencing difficulty breathing. Almost one in five reported experiencing an asthma emergency. There were also financial and productivity impacts, with 21% reporting being sick for longer than a week, 28% taking sick leave or work from home and 22% experiencing unexpected financial costs due to extra medication or equipment needs.<sup>19</sup>

The Royal Commission into National Natural Disaster Arrangements recognised exposure to low level particulate matter over multiple days can be as harmful as a substantial but short-term increase in particulate matter. It noted the need to balance the health impacts of hazard reduction burn smoke with the risks of fuel loads when planning burns.<sup>20</sup>

The NSW Bushfire Inquiry has called for “a much better understanding of cost-benefit and effectiveness of different hazard reduction techniques, including the public health costs associated with smoke from prescribed burning”.<sup>21</sup> It found that non-burning approaches to fuel reduction are particularly important around communities and recommended consideration of biofuel generating opportunities to dispose of cleared green waste.

Asthma Australia welcomes the proposed actions in the first priority area of the Draft Strategy and the recognition of the need for improved monitoring, reporting and health messaging. However, better informing the community about air pollution levels will not reduce the pollution caused by hazard reduction burns. The Draft Strategy should therefore propose stronger actions to reduce the pollution caused by hazard reduction efforts, specifying consideration of alternatives to burning, ensuring health organisations and a consumer representative in planning for hazard reduction burns, giving the community more advance notice of planned burns and staggering burns where possible.

**RECOMMENDATION 3: The proposed action in the NSW Clean Air Strategy to reduce the impacts of hazard reduction burn smoke should be strengthened to specify:**

- (a) A review of hazard reduction practices with a focus on increasing non-burning options such as mechanical fuel load reduction, particularly around settled areas;
- (b) The inclusion of health organisations and a consumer representative in hazard reduction burn planning so health impacts are fully considered;
- (c) Provision of health messages to the community ahead of planned burns with as much notice as possible; and
- (d) Staggering hazard reduction burns where possible in order to minimise the likelihood of prolonged periods of poor air quality.





## Measuring and reporting on air quality

The Draft Strategy includes a number of actions to improve air quality monitoring, reporting, forecasting and public information under the first priority area, “Better preparedness for pollution events”. Asthma Australia suggests the NSW Clean Air Strategy dedicate a standalone priority area for air quality monitoring and public information. These actions are relevant to all sources of air pollution, not just the air pollution events focused on in this section of the Draft Strategy (bushfires and hazard reduction burns).

Asthma Australia welcomes the proposed actions which would expand the coverage of the NSW air quality monitoring network. In particular, we support the recognition of the need for localised air quality information. We recommend this proposed action specify the need for local air quality monitoring in areas with problematic woodfire heater smoke, in addition to roadside monitoring. Asthma Australia also recommends the Draft Strategy commit to ensuring all communities near major industrial pollution sources have permanent air quality monitoring stations.

The NSW Clean Air Strategy should commit to increasing the number of portable air quality monitoring stations that can be deployed during extended air pollution events to areas without permanent air quality monitoring stations. This is particularly important in regional and rural communities.

Finally, Asthma Australia recognises the need for strong compliance and enforcement to incentivise government and polluters to minimise pollution which place the health of Australians at risk. The NSW Clean Air Strategy should commit to adequate resourcing to ensure compliance with, and enforcement of, air pollution laws and regulations.

**RECOMMENDATION 4: The NSW Clean Air Strategy should include air quality monitoring and public information as a standalone priority area.**

**RECOMMENDATION 5: The proposed actions in the NSW Clean Air Strategy to improve air quality monitoring in NSW should be strengthened by:**

- (a) Recognising the need for local air quality monitoring in areas with problematic woodfire heater smoke;**
- (b) Committing to installing permanent air quality monitoring stations in all communities near major industrial pollution sources; and**
- (c) Committing to increasing the number of portable air quality stations that can be deployed during air pollution events.**

**RECOMMENDATION 6: The NSW Clean Air Strategy should recognise the importance of compliance with and enforcement of air pollution laws and regulations and the need to adequately resource the NSW Environment Protection Authority.**

## Funding an AirSmart public education campaign

While it is critical to act immediately to reduce sources of air pollution, the results of this action will take time to come into effect. It is therefore equally critical to provide immediate support to people in NSW to minimise the current impacts of air pollution on their health.





Asthma Australia surveyed 12,000 people during the 2019-20 bushfires. The results indicated that despite the majority of respondents with asthma taking actions to protect themselves against the bushfire smoke, such as staying inside with windows and doors closed, many still experienced adverse health impacts. The survey results made clear the need for a public education campaign around the health impacts of air pollution, which has also been recommended by both the Royal Commission into National Natural Disaster Arrangements<sup>22</sup> and the NSW Bushfire Inquiry.<sup>23</sup>

An AirSmart public education campaign, similar to the SunSmart campaign, could provide information to local communities about air pollution and the associated health impacts. It should include information for the general public as well as targeted information for people with asthma and other vulnerabilities to air pollution. It is also important that any health information or advice is provided in culturally appropriate ways to people from Culturally and Linguistically Diverse (CALD) backgrounds and people with lower environmental health literacy. Presenting health information about air pollution in ways that meet the needs of the local community, including in multiple languages and formats, is vital to ensure all people receive the information they need to keep healthy and well.

Further, the provision of health information about air pollution should not be left to times of crisis. Instead, information about air quality should be provided year-round, with a focus on improving environmental health literacy so the community is able to interpret health advice when it is provided in times of crisis. During times of crisis, such as bushfire smoke events, there is a need to increase health advice and ensure the messaging is targeted to vulnerable groups.

**RECOMMENDATION 7: The NSW Clean Air Strategy should recognise the need to fund the development and implementation of an AirSmart public education campaign to reduce the health impacts of air pollution by empowering people to minimise their exposure, including:**

- (a) Year-round information to improve environmental health literacy;**
- (b) Targeted information for people with asthma and other pre-existing health conditions on actions to take to prepare for such events; and**
- (c) Increased messaging during air pollution crisis events such as bushfires.**

**RECOMMENDATION 8: The NSW Clean Air Strategy should recognise the need to provide targeted information about the adverse health impacts of poor air quality for people who are at greater risk, including people with asthma, people from culturally and linguistically diverse backgrounds, people with low literacy or reading skills and people who lack access to digital tools.**

## Reducing pollution from industry and transport

Asthma Australia refers to and supports Environmental Justice Australia's People's Clean Air Action Plan for NSW which details actionable recommendations to reduce air pollution caused by coal-fired power stations, coal mining and vehicles and transport (as well as woodfire heaters).<sup>24</sup>



## Empowering people to minimise the health impacts of air pollution

The main focus of the NSW Clean Air Strategy should be on actions to reduce air pollution levels. However, the effects of these actions will not be immediate. As outlined above, people with asthma and others vulnerable to air pollution are already suffering from health impacts of air pollution. The NSW Clean Air Strategy should guide a whole-of-government approach to air pollution which includes actions to support individuals and institutions to respond to air pollution and minimise the impacts. A health-in-all-policies approach to air pollution would recognise that the social determinants of health amplify the impacts of air pollution and address health inequities which limit the ability of vulnerable people to protect themselves.

### Addressing the social determinants of health

Asthma Australia suggests the NSW Clean Air Strategy recognise and respond to the inequitable impacts of air pollution in NSW. The social determinants of health include socioeconomic position, housing, early life, work and transportation and they interact to raise or lower a person's health and wellbeing.<sup>25</sup> These factors, along with health inequities, can amplify the health impacts of air pollution. People in low socio-economic areas are more likely to be exposed to air pollution and less likely to have the means to protect themselves, for example by purchasing and running air purifiers. The burden of disease is also far greater for certain population groups, including those experiencing socio-economic disadvantage.<sup>26</sup>

A major issue for people with asthma and others vulnerable to air pollution is the quality of their housing. Homes can be leaky, meaning pollutants such as PM2.5 can enter the home even when windows and doors are closed. People living in social housing, private rental housing and temporary housing have limited ability to improve their housing, for by example sealing doors and windows or installing air conditioning. In response to Asthma Australia's Bushfire Smoke Impact Survey during the 2019-20 bushfires, respondents spoke about the impact of smoke inside their homes, for example:<sup>27</sup>

*"Cannot afford air conditioning and am having problems buying an air purifier. Sealing an old 60s/70s flat difficult."*

*"Our rental is poorly sealed and the air conditioner is old."*

*"Still noticed my son's asthma deteriorate even by staying home in aircon because houses are not hermetically sealed."*

*"When smoke is intense on a day of high temperatures we are literally hunkered down in an incredibly hot stuffy house with no ability to use the evaporative cooling system. Even with windows shut, extra block out curtains and pieces of cardboard on windows to try and keep heat and smoke out it still is 29-30 degrees inside and doesn't cool down overnight so it's extremely uncomfortable."*

The NSW Clean Air Strategy should recognise the need to allocate government resources in ways that promote equity. This should include investing in improving existing social housing, providing infrastructure such as quality high affordable housing and public transport, and dedicating resources for preventive health programs to vulnerable communities.



**RECOMMENDATION 9:** The NSW Clean Air Strategy should recognise the inequitable impacts of air pollution in NSW and propose actions that address the social determinants of health, including additional investment in infrastructure such as quality affordable housing and public transport.

**RECOMMENDATION 10:** The NSW Clean Air Strategy should recommend the provision of support to vulnerable people to make their homes resilient to air pollution, for example, support to seal homes and contribute to the costs of air purifiers and air conditioners. (Refer to Recommendation 13 which addresses air purifiers.)

### Support for institutions to respond to air pollution events

Asthma Australia's Bushfire Smoke Impact Survey found that during the 2019-20 bushfires, indoor air pollution was an issue in workplaces, schools and public buildings, with respondents stating:

*"Improved air filtering and positive pressure air conditioning in some public locations such as libraries and pools, so there is somewhere with better air quality and they don't close when the air gets bad."*

*"Even working inside a shopping centre gave no relief as the smoke could still be smelt inside. It has been near impossible to avoid."*

*"Our school has not been responsive to the public health warnings and carried on with outdoor sport activities on days of hazardous air quality. My son has missed three days of school in order to avoid sports days etc."*

*"As a schoolteacher, smoke entered my classroom from door being open and closed all day. No air con or air purifiers. Not good."*

*"I've also had to cancel shifts on days when air quality would make it impossible for me to do my job, which has meant reduced income."*

In response to the sustained air pollution caused by the 2019-20 bushfires, some agencies in other jurisdictions released guidelines to help institutions respond. For example, the ACT Education Directorate released a policy on 'Managing Air Quality in Schools'. The policy included a risk assessment framework and an 'Air Quality Impact and Response Guide for Schools', with actions that could be taken (for example, remaining indoors, limiting physical activity and the cancellation of excursions).<sup>28</sup> Safe Work Australia provided information on 'Bushfires and air pollution' stating "workplaces must have measures in place to protect worker health and safety and manage risks".<sup>29</sup>

The NSW Clean Air Strategy should propose an action to develop frameworks that will enable local schools, workplaces, sports associations and public buildings to respond to air pollution events, including support for upgrades to reduce indoor air pollution and guidelines for responding to air pollution. Timely institutional responses will ensure children, outdoor workers, recreational sportspeople and other members of the community are safe during periods of air pollution.

The NSW Clean Air Strategy should also propose a feasibility study into options to protect people from air pollution, including the establishment of clean air shelters. Public buildings which meet clean air criteria, such as being well sealed and having air conditioning, could be designated as clean air shelters for people to use during air pollution events. This would benefit people who find



themselves away from home when air pollution levels rise, local residents whose homes have poor air quality and homeless people. Clean air shelters could also be used during thunderstorm asthma events and could minimise the risk of hospitalisations and deaths from thunderstorm asthma.

**RECOMMENDATION 11: The NSW Clean Air Strategy should propose an action to develop frameworks that will enable local schools, workplaces, sports associations and public buildings to respond to air pollution events, including support for upgrades to reduce indoor air pollution and guidelines for responding to air pollution**

**RECOMMENDATION 12: The NSW Clean Air Strategy should propose the establishment of a feasibility study into options to protect people from air pollution, including an assessment of whether to establish a clean air shelter program which would designate public buildings that meet clean air criteria.**

### Targeted financial support towards the cost of purchasing and running air purifiers

Air purifiers with HEPA filters can be highly effective in minimising exposure to bushfire smoke when used as recommended by the manufacturer in a well-sealed room.<sup>30</sup> Air conditioning can also be necessary during air pollution events that occur in hot weather which require vulnerable people to shelter inside for hours or days at a time. However, it is expensive to purchase and run air purifiers and air conditioners. Some members of the community require financial assistance to implement these measures and ensure their homes are safe during air pollution events.

The NSW Clean Air Strategy should propose a scheme to assist people of low socio-economic status with asthma with the costs of purchasing and running air purifiers.

**RECOMMENDATION 13: The NSW Clean Air Strategy should recognise the need to provide financial support to people of low socio-economic status with asthma towards the costs associated with using air purifiers with a HEPA filter. (Refer to Recommendation 10 which addresses making homes resilient to air pollution.)**



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## WOODFIRE HEATERS AND ASTHMA POLICY POSITION STATEMENT

Last updated: April 2021

### Introduction

Woodfire heater smoke is the largest source of winter air pollution in areas including Sydney, Canberra and Tasmania,<sup>1</sup> yet just 7% of Australian households use woodfire heaters as their main source of heating.<sup>2</sup> Evidence from Tasmania suggests more people die from woodfire heater smoke than bushfire smoke,<sup>3</sup> yet consumer research shows more people are concerned by bushfire smoke.<sup>4</sup>

Woodfire heater smoke contains harmful pollutants including fine particulate matter and known carcinogens. There is no 'safe' level of air pollution and health impacts can occur even at low levels of pollution.<sup>5</sup> Woodfire heater smoke is a serious risk factor for asthma, both in terms of developing asthma and triggering symptoms in people who already have asthma.<sup>6</sup> It is also a risk factor for other respiratory illnesses, certain cancers, cardiovascular disease, premature birth and premature death.<sup>7</sup>

*"People who have asthma and other respiratory conditions are very badly affected by the smoke from these heaters, my neighbour has asthma and suffers terribly because here in Canberra and in surrounding areas, there are a lot of these woodfire heaters."*

Kambah (Canberra) ACT, 52

These health impacts result in substantial economic costs, which have been estimated at \$3,800 per woodfire heater.<sup>8</sup> In Tasmania alone, the average yearly health cost of woodfire heater smoke is an estimated \$293 million.<sup>9</sup>

Woodfire heater smoke levels vary between regions. Woodfire heater use is more common in the colder states and territories where use peaks in winter.<sup>10</sup> Smoke from woodfire heaters is more problematic in areas where conditions prevent it dispersing.<sup>11</sup> Woodfire heater smoke can be problematic in regional towns such as Armidale in NSW as well as in major population centres such as Greater Metropolitan Sydney.

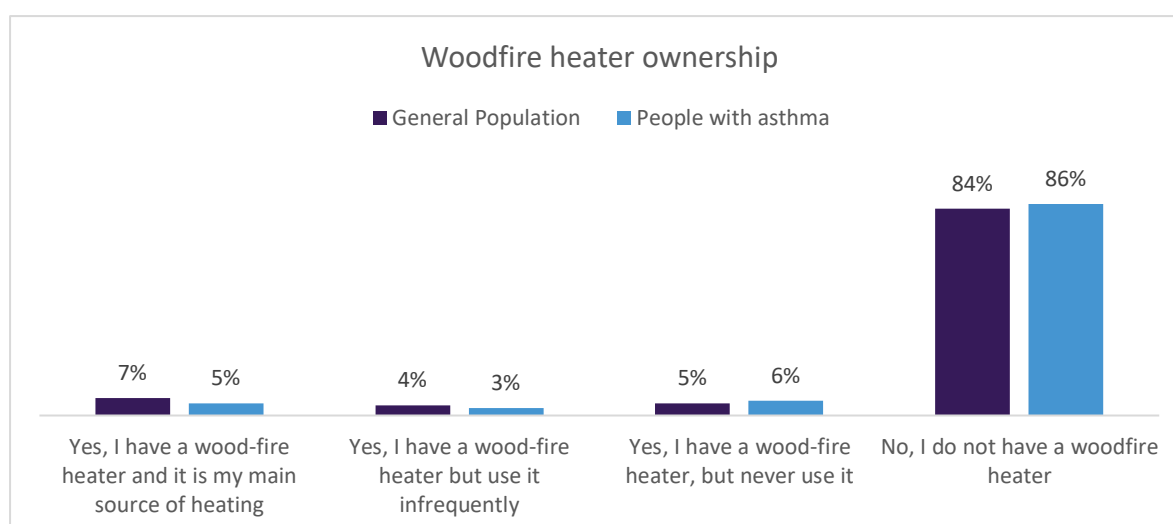
In November 2020, Asthma Australia commissioned a nationally representative survey of over 25,000 people.<sup>12</sup> We aimed to understand the impacts of woodfire heaters on the people who use them and their communities, and the beliefs people hold about woodfire heater use and relevant policy or public health actions. The research found people exposed to woodfire heaters are largely

unable to protect themselves against woodfire heater smoke when it is present, and that people are supportive of regulations to reduce the impact of woodfire heaters, with even stronger support among people with asthma.

Asthma Australia calls on all levels of government to implement reforms in order to minimise the health impacts of woodfire heater pollution in areas with high levels of smoke emissions, including programs to phase out woodfire heaters and a national AirSmart health promotion campaign to educate people about the health impacts of air pollution.

## Woodfire heater use

Asthma Australia’s Woodfire Heaters and Health Survey<sup>13</sup> found 11% of Australians reported owning and using a woodfire heater, with only 7% reporting they use it as their main source of heating. This is higher in cooler states and territories, with 13% of people in Tasmania and 14% of people in the Australian Capital Territory reporting they use a woodfire heater as their main source of heating. Woodfire heater ownership is also higher in regional and rural areas across the country. People with asthma are only marginally less likely to own and use a woodfire heater.



*“...It gets pretty bad here (Bendigo) because even in the new housing areas where we are, a lot of people have installed wood-fire heaters, I would say at least half of the homes built in the last five years that I know would have one.”*

Bendigo VIC

## Woodfire heater smoke and human health

Woodfire heater smoke contains a range of pollutants including particulate matter, carbon monoxide and volatile organic gases.<sup>14</sup> Fine particulate matter, known as PM2.5, is small enough to enter the lungs and bloodstream.<sup>15</sup> Evidence shows there is no safe level of exposure to PM2.5.<sup>16</sup>



People with asthma are among those most vulnerable to particulate matter exposure, including from woodfire smoke.<sup>17</sup> Findings from Asthma Australia's survey show people with asthma are twice as likely to experience respiratory symptoms when exposed to woodfire heater smoke compared to the general population: nearly one-quarter of people with asthma (23%) reported respiratory symptoms compared with 11% of the general population.<sup>18</sup>

People with other respiratory illnesses are also particularly vulnerable to woodfire heater emissions, as are pregnant people, children and elderly people.<sup>19</sup> Exposure to emissions has been associated with certain cancers, cardiovascular and respiratory hospital admissions and emergency department visits, premature birth and premature death.<sup>20</sup>

Local air quality information is essential for people to be able to understand when woodfire heater emissions reach harmful levels in their neighbourhood. However, the number of locations where air quality data is collected varies between jurisdictions. Air quality monitoring sites are often selected based on population density and size, which means many regional and rural populations lack adequate local air quality monitoring. In 2020, a NSW Parliamentary Committee Inquiry into the health impacts of poor air quality recommended the NSW Government expand its Air Quality Monitoring Network and consider using low cost sensors to ensure local air quality data is available in as many localities as possible.<sup>21</sup>

### Consumer understanding of woodfire heater health impacts

According to Asthma Australia's Woodfire Heaters and Health Survey, the health impacts on vulnerable populations are widely understood, with 75% of the general population and 85% of people with asthma agreeing woodfire heaters can cause health impacts for certain people. However, the potential impact on the broader population of low-level exposure is less widely recognised. Just over half (55%) of the general population recognise that woodfire heaters cause health problems for the general population.

The survey results also show most people who experience respiratory symptoms do not feel they are able to reduce their exposure to woodfire heater smoke. Only 28% of the general population and 18% of people with asthma said they are able to protect themselves from woodfire heater smoke when present. A common response from people on how they attempt to protect themselves is staying inside with their doors and windows closed when smoke is present. This is not a practical solution, as woodfire heater smoke is a persistent problem throughout affected regions in the colder months and people may be exposed daily or multiple times a week. It is also unlikely to protect the many people living in homes which aren't well-sealed.

*People with asthma like my sister-in-law suffer the most in terms of health impacts, she lives in the Lenah Valley (Hobart) and basically has to live in the house with all the doors and windows shut from May-September because it induces asthma attacks."*

Mount Stuart (Hobart) TAS, 56

**Research focus: The health costs of woodfire heater smoke<sup>22</sup>**

University of Tasmania research suggests woodfire heater smoke is significantly more problematic from a health perspective than bushfire or hazard reduction burn smoke in Tasmania.

Researchers modelled the health impacts of smoke from woodfire heaters and landscape fires (including bushfires and hazard reduction burns) in Tasmania between 2010 and 2019, and the associated health costs. They estimated that, in total, wood smoke caused 69 premature deaths, 86 hospital admissions and 15 asthma emergency department visits annually, with over 74% of impacts attributable to woodfire heaters.

The researchers calculated that wood smoke exposure in Tasmania resulted in \$309 million in health costs each year, and that woodfire heater smoke was responsible for nearly 95% of costs. The average yearly health costs of woodfire heater smoke were estimated at \$293 million.

**Research focus: Greater Metropolitan Sydney PM2.5 health impacts<sup>23</sup>**

Woodfire heater smoke has been found to be the largest source of fine particulate matter in the Greater Metropolitan Region of Sydney. Researchers modelled the impacts of PM2.5 from eight major sources in Region in 2010-11. They found woodfire heaters were the largest source of PM2.5 emissions, contributing nearly one-quarter of total anthropogenic emissions despite being used by just 4.4% of Sydney residents as their main source of heating. The highest levels of PM2.5 were found to be in areas with high population density (with the one exception being a coal mining area). Long-term exposure to PM2.5 was found to be responsible for 1.2% of all mortality in the region, with woodfire heaters the largest contributor.

## Regional impacts of woodfire heater smoke

The health burden of woodfire heater smoke is not evenly distributed. Unsurprisingly, woodfire heaters are a bigger problem in states and territories which experience colder weather. In Tasmania, the ACT and NSW, woodfire heaters are the largest source of air pollution in winter.<sup>24</sup>

Asthma Australia's survey revealed 7% of respondents used woodfire heaters as their main source of heating nationally. This is higher in cooler states and territories, with 13% of people in Tasmania and 14% of people in the Australian Capital Territory reporting they use a woodfire heater as their main source of heating. Woodfire heaters are responsible for two-thirds of PM10 emissions in Canberra.<sup>25</sup>

The prevalence of woodfire heaters also varies between regions. For example, around half of households use woodfire heaters in Armidale<sup>26</sup> compared with just 4% of households in the Greater Metropolitan Region of Sydney.<sup>27</sup> Yet despite the relatively low number of woodfire heaters in the Sydney region, they are still the largest contributor to air pollution in winter. (See Research focus: Greater Metropolitan Sydney PM2.5 health impacts, above).

Woodfire heater smoke is also a bigger problem in areas where conditions mean woodfire heater smoke is less likely to disperse.<sup>28</sup> Topographic features can 'trap' pollution, as seen in Sydney, which

has a basin shape,<sup>29</sup> and in Launceston in Tasmania, which is in a river valley.<sup>30</sup> These features can combine with meteorological conditions to create inversion layers which further limit dispersal of pollution.<sup>31</sup>

#### **Case Study: Armidale, New south Wales**

Woodfire heaters are prevalent in the NSW regional town of Armidale. The town experiences problematic woodfire heater smoke as a result of geographic features that create inversion layers and other environmental aggravators of air pollution. Woodfire heater smoke has been estimated to cause an additional 750 GP visits each winter, and a local GP reportedly advised people to move away if they had lung conditions.<sup>32</sup> There has been considerable local action to minimise the health impacts of woodfire heater smoke. Armidale Regional Council now requires an application to be submitted for any installation or replacement of woodfire heating appliances with the aim of ensuring compliance with air pollution standards and prevention of smoke inhalation by neighbours.

#### **Case Study: The cost of woodfire heater emissions in Victoria**

A Policy Impact Assessment<sup>33</sup> prepared for Victoria's Environment Protection Authority in 2017 assessed the health costs of woodfire heater emissions and the benefits of various regulatory interventions to reduce emissions. It quantified the total health costs of woodfire heater emissions at more than \$8 billion over 10 years. The Policy Impact Assessment found that accelerating replacement of existing woodfire heaters was by far the most effective intervention in terms of avoiding particulate matter emissions and would result in the greatest net benefit at over \$462 million. In comparison, adopting an efficiency standard would deliver a net benefit of under \$33 million and tightening the emissions standard for woodfire heaters would have a net benefit of just over \$28 million. (In late 2020, the Victorian Government announced a household energy efficiency package which included funding to replace old heaters, including woodfire heaters, with energy efficient alternatives.<sup>34</sup> However, detail on this program is not available.)

#### **Case Study: Launceston, Tasmania**

Woodfire heater smoke has been recognised as the biggest air quality concern in Tasmania<sup>35</sup> where the second largest city of Launceston became a focus for strategies to reduce woodfire heater pollution.<sup>36</sup> Woodfire heaters became more popular throughout Tasmania in the 1980s and 1990s and they could be found in two-thirds of Launceston households in 2001. A program of interventions began that year and by the end of the program in 2004, woodfire heater prevalence was reduced to 30% of households. Researchers studying the impact of these interventions measured air pollution before and after the interventions, finding a significant decrease in annual particulate matter pollution and an even greater decrease in winter air pollution levels.<sup>37</sup>

## Backyard fire pits

Anecdotally, backyard fire pits are becoming more popular. Consumer reports to Asthma Australia indicate fire pits became problematic in Brisbane after the city's council lifted a ban on backyard burning in 2020.<sup>38</sup> Health and environmental authorities across the world have issued warnings about their use with concerns about air pollution, bushfire danger and the impact on groups vulnerable to air pollution, including people with respiratory conditions.<sup>39</sup>

## Woodfire heating and climate change

Woodfire heating exacerbates the impacts of climate change. Firewood production and use can be considered carbon dioxide-neutral if the carbon dioxide emitted is accounted for by replacement trees. However, this is not the case in Australia where emissions studies have shown domestic woodfire heating emissions were significantly underestimated.<sup>40</sup> Burning wood – even the more sustainable types – produces toxic pollutants such as methane and black carbon particles which damage the environment, aggravate climate change and negatively impact human health.<sup>41</sup>

## Regulatory approaches to woodfire heaters

In Australia, regulation of woodfire heaters is complex, with responsibility shared across all levels of government. Woodfire heating appliances and their emissions are governed by Australian Standards which need to be legislated by state and territory governments to be enforceable. State and territory governments are also responsible for monitoring and regulating emissions, although this is often delegated to local governments.

There have been a number of successful programs to reduce the number of woodfire heaters in areas where their emissions are problematic:

- In 2001, a coordinated approach to reduce air pollution was implemented in Launceston including a community education campaign, enforcement of environmental regulations and a woodfire heater replacement program. These interventions resulted in a dramatic drop in woodfire heater prevalence, from 66% of homes having woodfire heaters to just 30% by the end of the program in 2004. Evaluation of the intervention found there was decreased air pollution which was associated with reduced cardiovascular and respiratory mortality during winter in Launceston, compared to Hobart where no interventions were implemented.<sup>42</sup>
- The ACT Government runs the Actsmart Wood Heater Replacement Program, with the aim of improving Canberra's air quality by offering financial incentives to remove and dispose of woodfire heaters.<sup>43</sup> The Australian Medication Association and other health groups have called for similar schemes to be introduced in other states and territories.<sup>44</sup>
- The Christchurch Clean Heat Project in New Zealand intended to improve air quality by removing woodfire heaters. It provided financial support towards replacement low emission heaters and improved insulation. As a result, woodfire heaters were replaced with reverse cycle air conditioners in 1,973 households.<sup>45</sup>

Other regulatory approaches to phasing out woodfire heaters include banning their installation in new residential developments and requiring them to be removed when a home is sold.

In addition to reforms aimed at phasing out woodfire heaters, governments have implemented education campaigns around minimising emissions from existing woodfire heaters. For example, the NSW Environmental Protection Agency has a resource kit for local governments to help educate communities.<sup>46</sup>

### Consumer attitudes towards regulating woodfire heaters

In Asthma Australia's consumer survey into woodfire heaters, more than half of the general population supported woodfire heaters being phased out with a subsidy (55%) or banned (54%). People with asthma were particularly supportive of phasing out (71%) or banning (65%) woodfire heaters.

In general, people seemed to be more supportive of regulations or restrictions of woodfire heaters, compared to requiring neighbours to inform prior to use or community education about correct use and how to reduce smoke. This suggests people want stronger action which takes it out of their individual control to manage, given people largely feel unable to protect themselves from woodfire heater smoke.

People were most supportive of regulations which restrict the use of woodfire heaters in built up or metropolitan areas, where people live in close proximity. However, results from our survey show that people in regional and rural areas are more likely to be exposed to woodfire heaters, and on a more frequent basis than those in metropolitan areas.

Statement	All (%)			PWA (%)		
	Disagree	Neutral	Agree	Disagree	Neutral	Agree
Woodfire heaters should not be allowed in urban or built-up areas	20	3	77	14	2	84
People should be able to use their preferred heating source	35	4	61	59	3	38
Woodfire heaters should be phased out (e.g. a subsidy or rebate scheme)	40	5	55	25	4	71
Woodfire heaters should be banned	39	7	54	31	4	65
Governments should regulate woodfire heater use	41	9	50	28	6	66
People using woodfire heaters should inform neighbours prior to use	39	13	48	35	9	56
There should be community education about how to correctly use and reduce smoke from woodfire heaters	57	6	37	42	8	50

*"These wood-fire heaters don't have a place in a city where people live in close proximity, just a cluster of a few homes with one can have a large impact on a lot of people in the neighbouring area. I used to live in Kenthurst (suburb of Sydney) and every winter people in the area would be affected and complain about the smoke to the local council."*

Macquarie Park (Sydney) NSW, 36

*"I don't know why they haven't been totally banned in residential areas in major cities and large towns, my mother lives in Tamworth and when I was there in July, the smoke from the wood-fire heaters was so bad, luckily I don't have asthma but it still made me unwell with a headache and sore throat."*

Speers Point (Newcastle) NSW, 43

## Recommendations

All levels of government will need to implement reforms in order to minimise the health impacts of woodfire heater pollution in areas with high levels of smoke emissions. Asthma Australia recommends the following interventions.

**Recommendation 1:** Prohibit installation of woodfire heaters in new homes.

**Recommendation 2:** Require woodfire heaters to be removed when a home is sold.

**Recommendation 3:** State, territory and local governments introduce financial support programs to remove woodfire heaters and replace them with low emission alternatives and home improvements to reduce need for heating.

**Recommendation 3:** State, territory and local governments implement localised air quality monitoring in areas with high woodfire heater usage, including the use of low-cost monitors.

**Recommendation 4:** Local governments enforce environmental regulations by investigating complaints of excessive woodfire heater smoke, educating individuals around reducing emissions and issuing infringement notices when needed.

**Recommendation 5:** In addition to implementing measures to phase out woodfire heaters, state, territory and local governments implement programs to educate people using woodfire heaters around minimising emissions.

**Recommendation 6:** Commonwealth, state and territory governments support the development and implementation of an AirSmart public education campaign to minimise the health impacts of poor air quality.

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## **Options for wood smoke control in New South Wales**

*Discussion paper*

*Cover photo:* John Todd

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Published by:

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ISBN 978 1 74293 563 8  
EPA 2012/0267  
October 2012

Printed on environmentally sustainable paper

# Contents

## About this discussion paper

<b>Summary</b> .....	<b>1</b>
<b>1. Introduction</b> .....	<b>3</b>
<b>2. Background</b> .....	<b>4</b>
2.1 What is wood smoke and what are its impacts on health?	
2.2 How significant is wood smoke in NSW?	
2.3 Current NSW wood smoke control framework	
2.3.1 Regulatory measures	
2.3.2 Non-regulatory initiatives	
2.3.3 National wood heater action	
<b>3. Additional controls for wood smoke management</b> .....	<b>8</b>
3.1 Feedback from local government	
3.2 Economic assessment of wood smoke control measures	
3.2.1 Scope of the study	
3.2.2 Wood smoke control options evaluated in the study	
3.3 A new statutory wood smoke control framework	
3.4 Wood smoke control options	
<b>Glossary</b> .....	<b>13</b>
<b>Submission form: Wood smoke control options for NSW</b> .....	<b>14</b>

## About this discussion paper

This discussion paper proposes a number of additional wood smoke controls and a new implementation framework which could be used by local government in NSW to control wood smoke with assistance from the Environment Protection Authority. The additional wood smoke controls and framework in Section 3 were identified through local government feedback and the results of an economic analysis of the benefits and costs to the community, industry and government.

## Making a submission

Members of the community, industry and government are invited to comment on the current wood smoke controls, the proposed additional controls and the overall method of implementing them. To assist the review of comments, it is requested that responses address the questions in the submission form provided which also allows space for general comments.

The closing date for responses to the issues raised in this paper is:

**5.00 pm 30 November 2012**

Responses can be provided in the following ways:

- using the interactive submission form available at [www.environment.nsw.gov.au/woodsmoke/WoodSmokeOptions.htm](http://www.environment.nsw.gov.au/woodsmoke/WoodSmokeOptions.htm)
- printing and completing the PDF form available at the end of this document and
  - emailing it to [woodsmoke.reduction@epa.nsw.gov.au](mailto:woodsmoke.reduction@epa.nsw.gov.au), or
  - faxing it to (02) 9995 5938, or
  - mailing it to –

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## Summary

Smoke emissions from domestic solid fuel combustion heaters, such as wood heaters and open fireplaces, are a major cause of air pollution in New South Wales, especially in densely populated areas that experience colder winters. Exposure to the fine particles in wood smoke is a significant health concern as they can cause respiratory and circulation problems, particularly in elderly people, children and those with existing health conditions. The impacts of wood smoke on local air quality vary from area to area due to differences in topography, weather conditions, housing density, and the number of wood heaters in use and how they are operated. Wood smoke controls, therefore, need to be tailored to specific locations to be most effective.

One approach to applying wood smoke controls to different locations would be to adapt the regulatory framework successfully used to manage open burning in NSW, which allows local councils to choose the level of control most suited to their areas. This would give councils new powers to manage the type and number of wood heater installations in areas where extra controls are needed. Councils with wood smoke problems could choose to implement one or more of the controls for particular locations, based on factors such as housing density, topography, zoning, new release areas, and proximity to schools and hospitals.

This discussion paper sets out six options to control wood smoke and a statutory framework for implementing them. The wood smoke control options were identified using data from the forthcoming air emissions inventory for the Greater Metropolitan Area in NSW, local government feedback on current controls and possible new measures, and an economic analysis of the benefits and costs to the community, industry and government of various control options.

The proposed wood smoke control options that councils could consider under a statutory framework depending on their own circumstances include:

### **Control Option 1**

Permitting the installation of only low-emission, high-efficiency wood heaters in designated areas – wood heaters would have maximum emissions of no more than 2–3 grams of particles for each kilogram of wood burnt and operate at a minimum efficiency standard of 65–70%.

### **Control Option 2**

Removal of open fireplaces by the owners of dwellings in designated areas before the sale of the property – this would require owners to either block out fireplaces, rendering them inoperable, or convert the space for gas or electric heating.

### **Control Option 3**

Removal of older or high-emission wood heaters in designated areas before the sale of dwellings.

### **Control Option 4**

Disallow the installation of open fireplaces in designated areas.

### **Control Option 5**

Disallow the installation of wood heaters in designated areas.

### **Control Option 6**

Disallow all new installations of solid fuel combustion heaters, such as wood heaters and open fireplaces, within the local government area.

Councils with no wood smoke problem in their local area could choose to take no action.

This discussion paper invites members of the community, industry and government to comment on this list of wood smoke control options and the proposed wood smoke control framework by addressing the questions in the submission form provided.

## 1. Introduction

Smoke from wood heaters and open fireplaces contain a mix of noxious gases – carbon monoxide, oxides of nitrogen and a range of organic compounds – as well as fine particles (PM<sub>2.5</sub> and PM<sub>10</sub>) that can be breathed deep into the lungs. The New South Wales Government is concerned about wood smoke because of its potentially adverse impacts on health, particularly for elderly people, children and those with existing health conditions, such as asthma.

The effect of wood smoke on air quality varies from area to area and is related to a number of local factors. These include topography, prevailing weather conditions, housing density, and the number of wood heaters in use and how they are being operated. On cold, still and clear winter nights, wood smoke becomes trapped under a cold layer of air close to the ground rather than being dispersed or blown away. This elevates the levels of fine particles and causes the brown haze often seen on still winter mornings.

NSW is likely to face continuing problems with wood smoke with the number of wood heaters installed predicted to increase as the population grows. According to data supplied by the Australian Home Heating Association, sales of wood heaters across Australia grew 33% in 2011. With an extra 640,000 new residences expected in Sydney by 2031<sup>1</sup> and no change to current wood smoke controls, newly installed wood heaters alone are expected to emit 1629 tonnes of particulate matter (PM<sub>10</sub>) per year. This equates to a 20% growth in wood heater emissions.<sup>2</sup>

Under the current regulatory regime in NSW, wood smoke is largely managed by local government as it mostly affects local air quality. Councils are aware of wood smoke problems in their local government areas and are responsible for handling complaints and enforcing wood smoke regulation. The Environment Protection Authority (EPA) oversees the existing regulatory framework, advocates for national regulation of wood heater standards, and provides training and support for local councils on the regulatory and planning tools available.

The EPA is currently examining how it can further support local government to address wood smoke problems in areas with potentially high population exposure.

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<sup>1</sup> Department of Planning and Infrastructure 2010, *Metropolitan Plan for Sydney 2036*, Strategic Direction D – Housing Sydney's Population, Sydney: [metroplansydney.nsw.gov.au/Home/MetropolitanPlanForSydney2036.aspx](http://metroplansydney.nsw.gov.au/Home/MetropolitanPlanForSydney2036.aspx)

<sup>2</sup> Based on the forthcoming air emissions inventory values for 2008, details of which are available from the Environment Protection Authority

## 2. Background

### 2.1 What is wood smoke and what are its impacts on health?

Wood smoke has the potential to affect not only the users of wood heaters and open fireplaces but surrounding neighbours as well. Wood smoke contains fine particulate matter of various sizes (PM<sub>2.5</sub> and PM<sub>10</sub>), volatile organic compounds, carbon monoxide and oxides of nitrogen. Studies have shown an association between exposure to these substances and a range of health complaints, leading to hospitalisation, restricted activity days and, especially over the longer term, even premature deaths.

Exposure to very small particles can have implications for health because they can pass through the throat and nose and enter deep into the lungs, causing irritations and respiratory and circulation problems, predominantly in the elderly, children and people with existing health conditions, such as asthma.

The cost to health of wood smoke emissions across urban, regional and rural areas of NSW has been estimated at \$8.1 billion over the next 20 years.<sup>3</sup>

### 2.2 How significant is wood smoke in NSW?

The draft air emissions inventory for 2008 for the NSW Greater Metropolitan Region (GMR) is a detailed listing of human-derived pollutants by source type discharged into the atmosphere over a given period. The inventory, details of which are available from the EPA, covers an area of 57,330 square kilometres that includes the greater Sydney, Newcastle and Wollongong regions.

The latest draft inventory numbers show that in 2008 wood heaters and open fireplaces contributed to almost 8.5% of annual particle pollution in the GMR. In Sydney alone, the share of particle pollution emitted from wood heaters and open fireplaces was almost 35% of annual particle pollution as shown in Figure 1.

Over time, the contribution to particle pollution from wood heaters and open fireplaces in the GMR has also been on the rise. Comparing inventory data between 2003<sup>4</sup> and 2008, particle pollution from wood heaters grew by 24% and firewood consumption by 44% over this period.

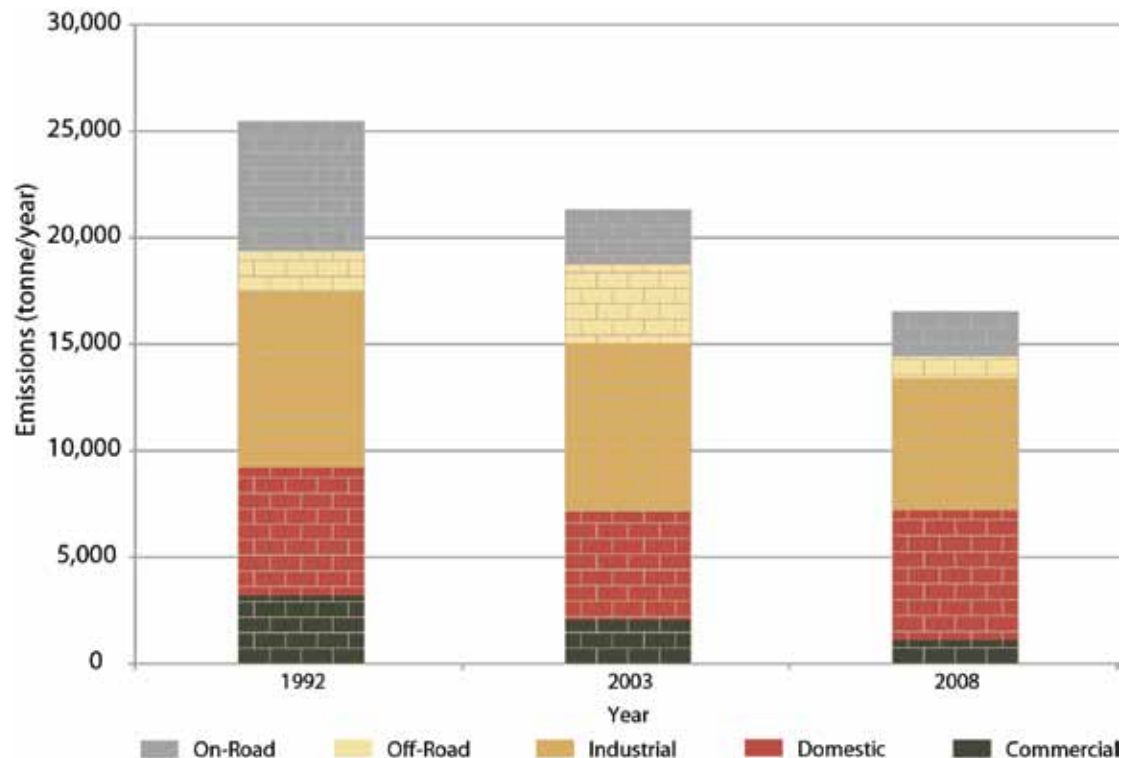
The 2008 draft inventory found that proportionally motor vehicle emissions are decreasing due to the strong regulatory framework in NSW and Australia, but emissions from the domestic sector are rising, in both absolute terms and as a proportion of all emissions.

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<sup>3</sup> AECOM 2011, *Economic Appraisal of Wood smoke Control Measures* available at [www.environment.nsw.gov.au/woodsmoke/smokecontrolopts.htm](http://www.environment.nsw.gov.au/woodsmoke/smokecontrolopts.htm)

<sup>4</sup> Available at [www.environment.nsw.gov.au/air/airinventory.htm](http://www.environment.nsw.gov.au/air/airinventory.htm)





**Figure 1: Sources of human-derived particle emissions in Sydney**

Note: Over 93% of 'domestic' particle emissions in Sydney were from wood heaters and open fireplaces in the draft 2008 inventory.

## 2.3 Current NSW wood smoke control framework

Currently the control of wood smoke emissions in NSW is largely managed by local government because wood smoke is predominantly a localised problem. Councils are aware of the precise location of wood smoke problems and deal with complaints about them from residents as the 'appropriate regulatory authority' for enforcement of wood smoke offences under the *Protection of the Environment Operations Act 1997* (POEO Act).

The EPA administers the current regulatory framework for wood smoke control and works with other Australian jurisdictions and the Commonwealth to improve standards for heating appliances. The EPA also supports local councils by informing them of the education, regulatory and planning tools available and providing periodic training and funds for education, enforcement and wood heater replacement programs.

### 2.3.1 Regulatory measures

*Protection of the Environment Operations (Clean Air) Regulation 2010* (Clean Air Regulation)

The Clean Air Regulation requires all wood heaters sold in NSW (wholesale or retail) to be certified under the AS/NZS 4013:1999 standard. In order to be certified under the standard, emissions from wood heaters must not exceed 4 grams of particulate matter for each kilogram of wood burnt when tested. It is also an offence under the Clean Air Regulation to alter the structure, exhaust or inlet air system of any heater that has been certified under AS/NZS 4013.

### *Protection of the Environment Operations Act 1997*

The POEO Act provides regulatory powers for local councils to issue **smoke abatement notices**. These notices may be issued where a household has been given information on correct wood heater operation but makes little or no effort to prevent excessive emissions of wood smoke. Smoke abatement notices were created primarily as a deterrent to poor wood heater operation.

The POEO Act also provides regulatory powers for local councils to issue a **prevention notice** to householders who use a wood heater 'in an environmentally unsatisfactory manner'. For example, a prevention notice could direct a householder to:

- not use a particular wood heater
- ensure that the wood heater has an adequate air supply to prevent smoke emissions
- burn only dry wood
- increase the height of a chimney
- only operate the wood heater between specified hours.

However, issuing smoke abatement notices is the preferred option where the wood smoke problem can be rectified by maintenance or improved operation.

### *Local Government Act 1993 and local government policy and planning instruments*

Local councils can declare the installation of a wood heater to be compliant or exempt development under section 68(1) of the *Local Government Act 1993*. A small group of NSW councils is using development control plans (DCPs) and local policies to place controls on wood heater installations, depending on the severity of wood smoke issues in their local area. These controls range from disallowing the installation of new wood heaters or open fireplaces to only allowing the installation of wood heaters that meet stricter emissions standards. Local councils that have implemented these approaches include Armidale-Dumaresq, Ashfield, Camden, Holroyd and Waverley.

In cases where the operation of an existing solid fuel heater is affecting a number of people, councils may use section 125 of the Local Government Act to require the owner to minimise the pollution from their heater. To issue an order for wood smoke emissions under s.125, councils need to have evidence (such as complaints or statements) that more than one person is being adversely affected. The resulting order might then require a ban on use of the heater at certain times. Where an owner repeatedly fails to operate a heater cleanly, the council may use s.125 to prevent its use altogether.

## **2.3.2 Non-regulatory initiatives**

### *Wood heater replacement programs*

The NSW Government and local councils have periodically provided cash incentives to replace older wood heaters with cleaner heating alternatives. These incentives are usually provided on a first-come basis or to low income earners or pensioners who would have difficulty upgrading their home heating systems. Incentive programs such as these are generally supported by community education and enforcement campaigns.

### *Wood heater audit program*

Wood heaters on sale in NSW are periodically audited to ensure they comply with the requirements of the Clean Air Regulation. The last audit in mid-2010 included 44 businesses that manufacture, distribute or retail wood heaters in Castle Hill, Wollongong/Nowra and the Central Coast. After completion of the audit, businesses that did not comply with the requirements were advised and all promptly rectified their operations.

### *Local government training and community awareness*

The NSW Wood smoke Reduction Program - a 'Clean Air and Healthy Communities' initiative – delivered information to the community and supported local councils in their community awareness programs, chimney surveys and issuing of smoke abatement notices. Information on this program is available at [www.cleartheair.nsw.gov.au/initiatives/clean\\_air\\_healthy\\_communities\\_program/wood\\_smoke\\_reduction.aspx](http://www.cleartheair.nsw.gov.au/initiatives/clean_air_healthy_communities_program/wood_smoke_reduction.aspx)

The NSW Government has supported some council implementation of education and information programs on wood smoke through 'Let's Clear the Air' grants. These types of community education programs have provided information on the health impacts of wood smoke and the proper installation, operation and maintenance of wood heaters.

The EPA website also provides information on wood smoke and particle pollution: [www.environment.nsw.gov.au/woodsmoke](http://www.environment.nsw.gov.au/woodsmoke)

### **2.3.3 National wood heater action**

The EPA is working with the Commonwealth and other jurisdictions to achieve effective national emission and efficiency standards for new wood heaters.

A national approach may include actions such as a National Environment Protection Measure (NEPM), Commonwealth legislation, identical state control legislation nationwide, or referral of state control powers to the Commonwealth.

### **3. Additional controls for wood smoke management**

#### **3.1 Feedback from local government**

In October 2011, all 152 local councils in NSW were surveyed to assess the effectiveness of current wood smoke control measures and seek their ideas about new measures to improve the existing framework. The survey included questions on the significance of wood smoke in each council area, the level of community concern about it, and additional smoke control measures that councils might consider implementing.

Over 50% of the councils who responded to the survey reported wood smoke problems in their area. Councils currently have a range of strategies to deal with wood smoke from responding to complaints case-by-case to comprehensive local air quality plans and policies. However the survey also revealed that, overall, local government supported new measures to improve the existing regulatory framework.

#### **3.2 Economic assessment of wood smoke control measures**

In 2011, an independent consultant was commissioned to undertake an economic assessment on a range of options for controlling smoke from wood heaters.

The study set out to evaluate the costs to the community, industry and government and the benefits for health and the community of a number of control measures to reduce particle emissions from wood heater use.

The consultant's report (AECOM 2011) is available at [www.environment.nsw.gov.au/woodsmoke/smokecontrolopts.htm](http://www.environment.nsw.gov.au/woodsmoke/smokecontrolopts.htm).

##### **3.2.1 Scope of the study**

The scope of the study was to:

- develop a wide-ranging list of control options for managing emissions from solid fuel heaters
- subject each of these options to a cost-benefit analysis
- identify the equity impacts of each option using a socio-economic profile of households.

The economic assessment considered the following factors for each control option:

- housing density
- local topography and meteorological conditions
- more stringent emission and efficiency standards for some locations
- education programs.

The study did not make any recommendations as it was intended to be used as a supporting tool during consultation with stakeholders, allowing them to consider the most suitable wood smoke control options for their local needs.

### 3.2.2 Wood smoke control options evaluated in the study

Fourteen options were evaluated in the economic assessment.

The study assessed the net benefit (the difference between social benefits and costs to consumers, industry and government) of nine single control options (core options 1–9) and another five combinations of core options (combined options 10–14).

Table 1 details the wood smoke control options assessed in the study.

Core control option	Combined option (combination of core options)				
	10	11	12	13	14
1 No change to existing framework (baseline)					
2 Banning the sale and installation of new wood heaters	ü				
3 Stricter efficiency and emission limits for all new wood heaters		ü			
4 Removal of wood heaters at sale of house or within 7 years	ü	ü		ü	
5 Regulation for a maximum moisture content on firewood sold					ü
6 Levy on new wood heaters		ü	ü		
7 General licensing levy to install a wood heater				ü	
8 Levy on solid fuel for sale					ü
9 Cash incentives to take up and use an alternative form of heating	ü	ü	ü	ü	

**Table 1: Wood smoke control options evaluated in the economic assessment**

The study developed a model to determine projected emissions and net benefits within NSW for each core option up to 2030 and for each combined option applied to a number of case study areas.

The areas chosen had different characteristics, such as population density, socio-economic indexes and climate conditions, to provide examples of where control options could be applied to demonstrate a range of net benefits.

Table 2 summarises the net benefits for all wood smoke control options in the economic assessment.

Core control option	Net benefit for core options applied statewide	Combined option (combination of core options)				
		10	11	12	13	14
1 No change to existing framework (baseline)	\$0					
2 Banning the sale and installation of new wood heaters	\$2.07b	ü				
3 Stricter efficiency and emission limits for all new wood heaters	\$0.30b		ü			
4 Removal of wood heaters at sale of house or within 7 years	\$3.98b	ü	ü		ü	
5 Regulation for a maximum moisture content on firewood sold	\$0.37b					ü
6 Levy on new wood heaters	\$1.05b		ü	ü		
7 General licensing levy to install a wood heater	\$1.28b				ü	
8 Levy on solid fuel for sale	\$0.45b					ü
9 Cash incentives to take up and use an alternative form of heating	\$0.87b	ü	ü	ü	ü	
<b>Net benefit for combined options applied to case-study areas</b>		\$1.6b	\$1.47b	\$0.90b	\$1.53b	\$0.71b

**Table 2: Net benefit for the wood smoke control options evaluated in the economic assessment**

Overall findings of the study showed:

- the cost to health of wood smoke emissions across urban, regional and rural areas of NSW has been estimated at \$8.1 billion over the next 20 years
- the control options to ban and phase out wood heaters produced the greatest net benefit, but these options also had high non-health costs, such as the cost to consumers, industry and government
- the health benefits of all the control options were substantial over the years despite relatively modest implementation costs, but there would be impacts on some industry stakeholders and wood heater consumers.

### 3.3 A new statutory wood smoke control framework

Since the impact of wood smoke on local air quality varies from area to area, wood smoke controls need to be tailored to locations to be most effective. The economic assessment results and feedback from local government supports developing this type of approach as it allows councils to apply appropriate controls according to their community needs and unique geographic location.

One method of tailoring wood smoke controls to different locations could be to adapt a regulatory framework which allows councils to choose the level of control most suitable for their local area. Such a framework, similar to the control of open burning framework under the Clean Air Regulation, would give councils new tools to implement one or more wood smoke controls in Section 3.4. Where extra controls are needed, local councils could adopt one or more controls depending on factors unique to their government area such as high or low housing density, topography, climate, zonings, new release areas, community concerns, availability of alternative forms of heating, or proximity to schools or hospitals.

### 3.4 Wood smoke control options

The EPA has identified six potential wood smoke control options that local councils could consider under a statutory framework to manage wood smoke more effectively in their local areas. These options are based on the air emissions inventory data, local government feedback, and the findings of the economic assessment.

The economic assessment found the net health benefits of some wood smoke control options, such as a ban on the sale of wood heaters, are greater than others. However control measures of this type might not be accepted or supported by community, industry or government stakeholders. The six control options in this discussion paper were therefore identified after considering:

- their potential benefits for health
- funding requirements
- feasibility of their implementation by all levels of government
- costs to the community and industry
- their likely acceptability
- similar control measures used in New Zealand and North America.

The EPA is presenting the following proposed wood smoke control options for further discussion and comment. If adopted under a statutory framework, these controls would be supported by the EPA with ongoing education and supporting programs.

Please refer to the glossary for the definitions of terms used in the options.

#### Wood smoke Control Option 1

*Permitting the installation of only low-emission, high-efficiency wood heaters in designated areas – wood heaters would have maximum emissions of no more than 2–3 grams of particles for each kilogram of wood burnt and operate at a minimum efficiency standard of 65–70%.*

In the Canterbury Region of New Zealand, only low emission, high efficiency wood heaters may be installed and only then as a replacement for an existing wood heater.

This policy resulted in a 70% reduction in PM<sub>10</sub> emissions in Christchurch between 2002 and 2009.<sup>5</sup>

This option not only reduces wood heater emissions, it improves the efficiency in wood burning, producing more heat for less money.

## **Wood smoke Control Option 2**

*Removal of open fireplaces by the owners of dwellings in designated areas before the sale of the property – this would require owners to either block out fireplaces, rendering them inoperable, or convert the space for gas or electric heating.*

Open fireplaces are the least efficient method of heating a home and one of the most polluting. They can produce a warm ambience in the immediate vicinity but may cool the rest of the house by drawing air through the fireplace and sending it up the chimney, together with much of the heat generated by the fire.

The AECOM Report noted that the average house in Australia is sold every 7 years. Although this Report looked at phasing out upon sale or within a specified period of time, this option is limited to sale only. There is currently no register of existing fireplaces and a phasing out scheme within a specified time period would likely prove costly and administratively burdensome.

## **Wood smoke Control Option 3**

*Removal of older or high-emission wood heaters in designated areas before the sale of dwellings.*

As with the option to remove open fireplaces upon sale (Option 2), this option would take advantage of the turnover in house sales of 7 years, on average. While wood heaters generally last around 17 years, replacing wood heaters upon sale with more efficient models or an alternative heating system would accelerate this process. This option has been implemented in a number of US counties.

This means that many more polluting wood heaters would be removed or rendered inoperable within 7 years when a house is sold. New owners of the house would then have the choice to install a new, more efficient wood heater or an alternative heating system.

## **Wood smoke Control Option 4**

*Disallow the installation of open fireplaces in designated areas.*

This option would prevent the installation of open fireplaces and instead steer home owners towards more efficient forms of heating. Some Councils (for example, Pittwater and Camden) already disallow the installation of open fireplaces through the use of powers under the planning laws.

## **Wood smoke Control Option 5**

*Disallow the installation of wood heaters in designated areas.*

This option would permit Councils to take into account projected urban density, local topography and potential for wind dispersion of wood smoke, especially in planning new release areas - Camden and the Hills Shire already use this option for new release areas.

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<sup>5</sup> Scott, A and Scarrott, C (2011) Impacts of residential heating intervention measures on air quality and progress towards targets in Christchurch and Timaru, New Zealand. *Atmospheric Environment* 45 (2011) 2972-2980.



For established areas this option would complement requirements to remove open fireplaces or non-compliant wood heaters upon sale of a house (Options 2 and 3).

### **Wood smoke Control Option 6**

*Disallow all new installations of solid fuel combustion heaters, such as wood heaters and open fireplaces, within the local government area.*

This option applies to the whole of a Council's local government area and would be most suitable for high density urban local government areas or those with plans for higher density. Councils could also opt to complement this option with requirements to remove open fireplaces or non-compliant wood heaters upon sale of a house (Options 2 and 3). Holroyd Council already implements this option.

**Councils with no wood smoke problem in their local area could choose to take no action.**

## Glossary

AS/NZS 4013:1999		<i>Domestic solid fuel burning appliances: Method for determination of flue gas emission</i> , published by Standards Australia and as in force from time to time
Designated area		Refers to any area within a local government boundary specifically selected and assigned by a local council as an area where controls would apply. This could include the whole local government area or new release areas, areas of high population density, and the business districts of urban, regional and rural centres.
Fine particles	PM <sub>2.5</sub>	Any particle matter with an aerodynamic diameter less than 2.5 micrometres
	PM <sub>10</sub>	Any particle matter with an aerodynamic diameter less than 10 micrometres
Net benefit		<p>The difference between the monetary gain of a project (including health gains) and the associated costs used to generate those gains</p> <p>Net benefit = [\$ benefits – \$ costs]</p>
Open fireplace		Any indoor brick, stone or metal structure designed, manufactured or adapted for an open fire that burns any type of solid fuel
Solid fuel combustion heater		An appliance designed, manufactured or adapted for burning any type of solid fuel within the enclosed firebox
Total health cost		The economic burden of morbidity and mortality from fine particles in wood smoke emissions
Wood heater		In this discussion paper, refers to any solid fuel combustion heater, open fireplace or any other appliance that burns solid fuel for heating
Wood smoke		In this discussion paper, refers to any smoke emitted through a chimney from a wood heater as defined above

## Submission form: Wood smoke control options for NSW

An **interactive version** of this submission form is available at [www.environment.nsw.gov.au/woodsmoke/WoodSmokeOptions.htm](http://www.environment.nsw.gov.au/woodsmoke/WoodSmokeOptions.htm)

*Please note that the information you provide in this submission form will only be used to produce summaries of the views of stakeholders and assist the NSW Government in the development of additional options to control wood smoke.*

Please complete the tables below and refer to the glossary for the definitions of terms used in the survey.

Stakeholder		Please tick	Your location in NSW	Name of organisation (if applicable)
Member of community/public				
Industry	Retailer			
	Manufacturer			
	Importer			
	Installer			
	Solid fuel supplier			
	Gas or electricity supplier			
Local council				
State agency				
NGO/research/academic				

### Current wood smoke control framework

1. How effective do you think the current wood smoke controls are for managing wood smoke (refer to Section 2.3 of the discussion paper)?

1 Highly ineffective	2 Ineffective	3 Moderate	4 Effective	5 Highly effective	I don't know

### Additional wood smoke control options

**Wood smoke Control Option 1:** Permitting the installation of only low-emission, high-efficiency wood heaters in designated areas – wood heaters would have maximum emissions of no more than 2–3 grams of particles for each kilogram of wood burnt and operate at a minimum efficiency standard of 65–70%. (These requirements are stricter than the existing Australian standards.)

2. Would you support implementation of this wood smoke control option in your local area?

1 Strongly oppose	2 Oppose	3 Neutral	4 Agree	5 Strongly agree	I don't know	Doesn't apply to me

3. What impact would implementation of this wood smoke control option have on your business or operations?

1 Highly negative	2 Negative	3 Neutral	4 Positive	5 Highly positive	I don't know	Doesn't apply to me

4. Currently emissions from all wood heaters sold in NSW must not exceed 4 grams of particulate matter for each kilogram of wood burnt. However they are not required to meet an operational efficiency level. If you could modify the emissions and efficiency of wood heaters sold in NSW, what levels would you like to see?

a. Emissions level

4 grams (current requirement for AS4013:1999 certified wood heaters)	
3 grams	
2 grams	
1 gram	
Other, please specify	

b. Efficiency level

55%	
60% (currently only half the wood heaters sold in Australia meet this requirement)	
65%	
70% or higher	
Other, please specify	

5. Any further comments on this wood smoke control option?

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**Wood smoke Control Option 2:** Removal of open fireplaces by the owners of dwellings in designated areas before the sale of the property – this would require owners to either block out fireplaces rendering them inoperable or convert the space for gas or electric heating.

6. Would you support implementation of this wood smoke control option in your local area?

1 Strongly oppose	2 Oppose	3 Neutral	4 Agree	5 Strongly agree	I don't know	Doesn't apply to me

7. What impact would implementation of this wood smoke control have on your business or operations?

1 Highly negative	2 Negative	3 Neutral	4 Positive	5 Highly positive	I don't know	Doesn't apply to me

8. Any further comments on this wood smoke control option?

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**Wood smoke Control Option 3:** Removal of older or high-emission wood heaters in designated areas before the sale of dwellings.

9. Would you support implementation of this wood smoke control option in your local area?

1 Strongly oppose	2 Oppose	3 Neutral	4 Agree	5 Strongly agree	I don't know	Doesn't apply to me

10. What impact would implementation of this wood smoke control option have on your business or operations?

1 Highly negative	2 Negative	3 Neutral	4 Positive	5 Highly positive	I don't know	Doesn't apply to me

11. Any further comments on this wood smoke control option?

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**Wood smoke Control Option 4:** Disallow the installation of open fireplaces in designated areas

12. Would you support implementation of this wood smoke control option in your local area?

1 Strongly oppose	2 Oppose	3 Neutral	4 Agree	5 Strongly agree	I don't know	Doesn't apply to me

13. What impact would implementation of this wood smoke control option have on your business or operations?

1 Highly negative	2 Negative	3 Neutral	4 Positive	5 Highly positive	I don't know	Doesn't apply to me

14. Any further comments on this wood smoke control option?

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**Wood smoke Control Option 5:** Disallow the installation of wood heaters in designated areas

15. Would you support implementation of this wood smoke control option in your local area?

1 Strongly oppose	2 Oppose	3 Neutral	4 Agree	5 Strongly agree	I don't know	Doesn't apply to me

16. What impact would implementation of this wood smoke control option have on your business or operations?

1 Highly negative	2 Negative	3 Neutral	4 Positive	5 Highly positive	I don't know	Doesn't apply to me

17. Any further comments on this wood smoke control option?

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**Wood smoke Control Option 6:** Disallow all new installations of solid fuel combustion heaters, such as wood heaters and open fireplaces, within the local government area

18. Would you support implementation of this wood smoke control option in your local area?

1 Strongly oppose	2 Oppose	3 Neutral	4 Agree	5 Strongly agree	I don't know	Doesn't apply to me

19. What impact would implementation of this wood smoke control option have on your business or operations?

1 Highly negative	2 Negative	3 Neutral	4 Positive	5 Highly positive	I don't know	Doesn't apply to me

20. Any further comments on this wood smoke control option?

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## Possible revised wood smoke control framework

21. Given the information provided in the discussion paper, to what extent would you support a framework of optional controls to reduce wood smoke (refer to Section 3)?

1 Strongly oppose	2 Oppose	3 Neutral	4 Agree	5 Strongly agree	I don't know

22. Any further comments on a revised wood smoke control framework?

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