



Options for wood smoke control in New South Wales

Discussion paper

Cover photo: John Todd

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Published by:

Environment Protection Authority
59 Goulburn Street, Sydney NSW 2000
PO Box A290, Sydney South NSW 1232
Phone: (02) 9995 5000 (switchboard)
Phone: 131 555 (environment information and publications requests)
Fax: (02) 9995 5999
TTY users: phone 133 677, then ask for 131 555
Speak and listen users: phone 1300 555 727, then ask for 131 555
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

Report pollution and environmental incidents

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See also www.environment.nsw.gov.au

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

Printed on environmentally sustainable paper

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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
- printing and completing the PDF form available at the end of this document and
 - emailing it to woodsmoke.reduction@epa.nsw.gov.au, or
 - faxing it to (02) 9995 5938, or
 - mailing it to –

Principal Air Programs Officer
Air Policy and Programs Unit
Environment Protection Authority
PO Box A290
Sydney South NSW 1232

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_{2.5} and PM₁₀) 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 2031¹ and no change to current wood smoke controls, newly installed wood heaters alone are expected to emit 1629 tonnes of particulate matter (PM₁₀) per year. This equates to a 20% growth in wood heater emissions.²

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.

¹ 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

² 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_{2.5} and PM₁₀), 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.³

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 2003⁴ 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.

³ AECOM 2011, *Economic Appraisal of Wood smoke Control Measures* available at www.environment.nsw.gov.au/woodsmoke/smokecontrolopts.htm

⁴ Available at www.environment.nsw.gov.au/air/airinventory.htm

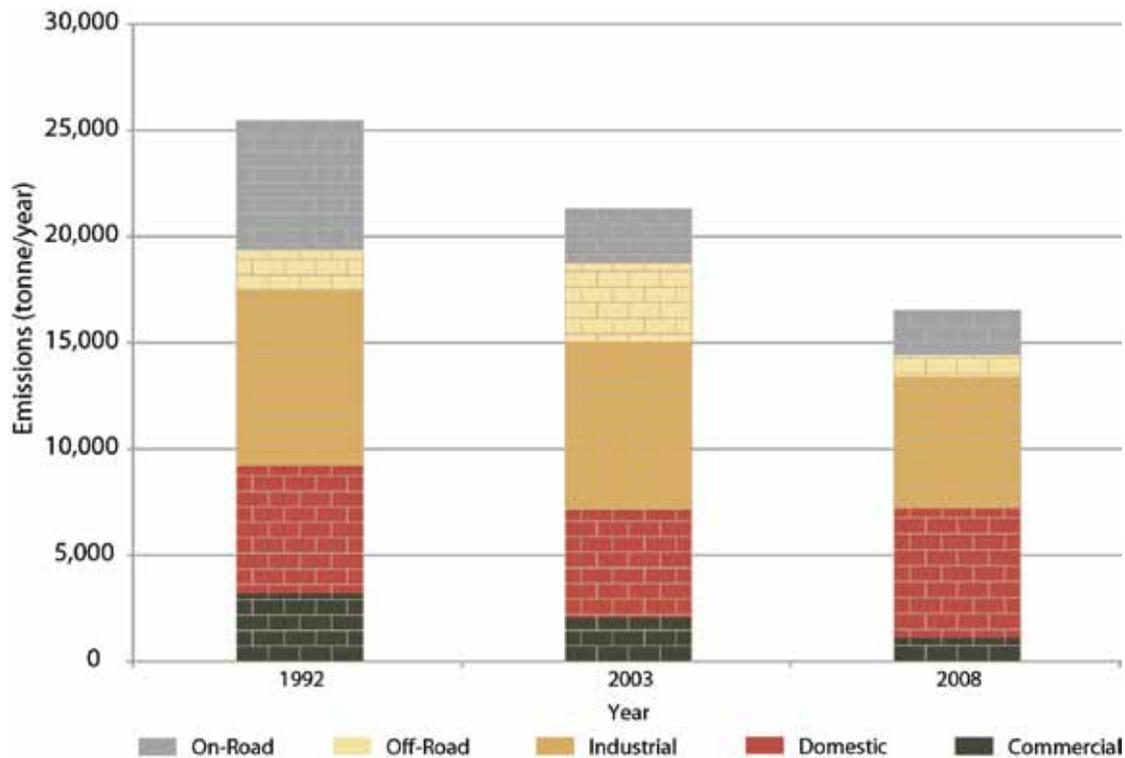


Figure 1: Sources of human-derived particle emissions in Sydney

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

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

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.

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	
Net benefit for combined options applied to case-study areas		\$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 PM₁₀ emissions in Christchurch between 2002 and 2009.⁵

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.

⁵ 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 _{2.5}	Any particle matter with an aerodynamic diameter less than 2.5 micrometres
	PM ₁₀	Any particle matter with an aerodynamic diameter less than 10 micrometres
Net benefit		The difference between the monetary gain of a project (including health gains) and the associated costs used to generate those gains Net benefit = [\$ benefits – \$ costs]
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

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?

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?

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?

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?

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?

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?

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?
