

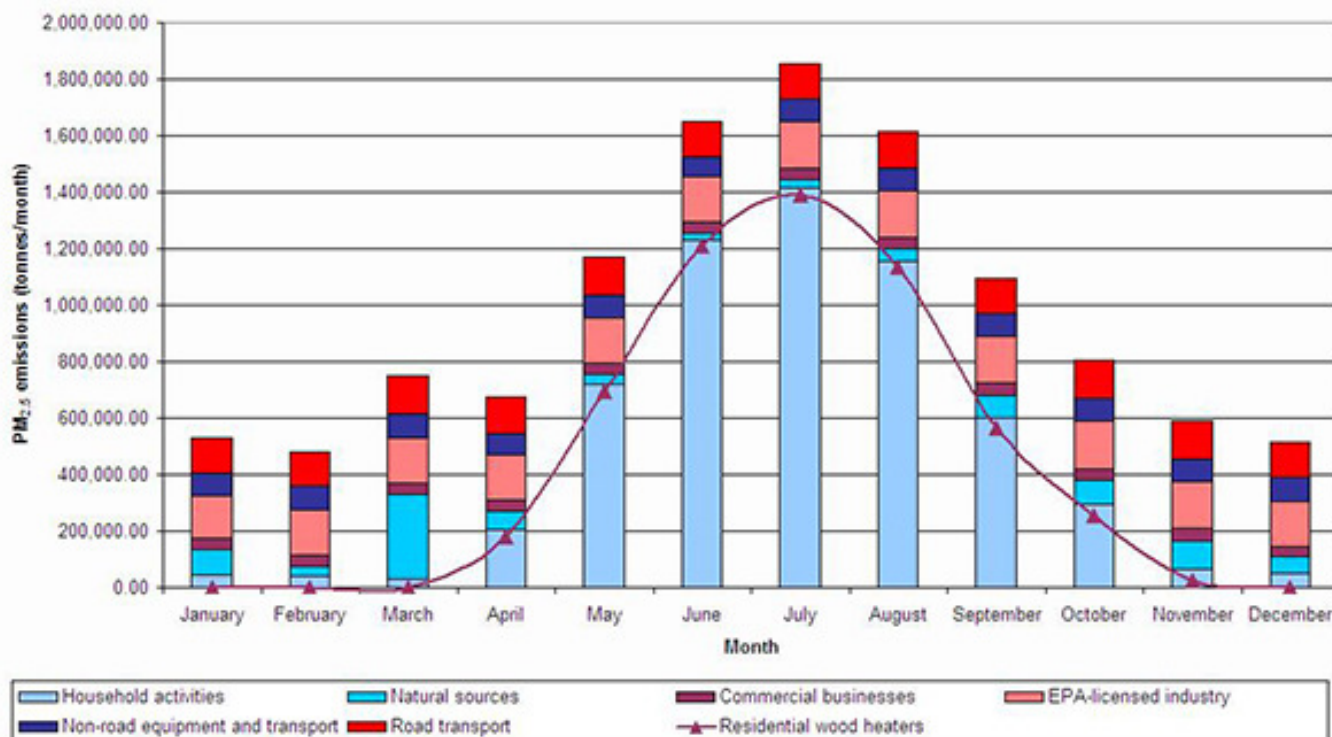
Submission: Consultation Regulation Impact Statement – Wood Heaters New England Greens

The New England Greens has members in Northern NSW, including Armidale, Glen Innes and Tamworth. We welcome this consultation Regulation Impact Statement for Wood Heater Emissions.

PM2.5 pollution. Research shows there is no safe level of some air pollutants, especially PM2.5, which is responsible for the premature deaths of *thousands* of Australians every year, many more than the next worst pollutant, ozone. PM2.5 is now considered the most health-hazardous air pollutant. It consists of particles so tiny they behave like gases and infiltrate houses even when all doors and windows are closed. They also infiltrate the deepest recesses of our lungs where they cause inflammation leading to heart and respiratory diseases. Woodsmoke is the major source of health-hazardous PM2.5 pollution in most urban areas, e.g. 50.6% of PM2.5 emissions Sydney. The substantial damage to public health from inadequate regulation of the asbestos industry was widely condemned. History appears to be repeating itself with PM2.5 pollution.

Wood heaters: 50.6% of Sydney's PM2.5 emissions. The latest NSW EPA emissions inventory (published Oct 2012) shows that, even in Sydney's mild climate, more than 50% of man-made PM2.5 emissions are from a tiny proportion of houses using domestic wood heating. Other sources of PM2.5 are declining, but woodsmoke is increasing in Sydney and represents a major health hazard in colder regional areas. A NSW Government report estimated the health costs of the average new wood heater installed in Sydney at \$4436 per year – many times higher than the benefit of allowing such heaters to be installed. The NSW EPA graph of emissions by month shows the additional burden on our health in winter (purple line) by a small proportion of Sydney's households using residential wood heaters. Research into the health effects of air pollution in Sydney found that showed that "*both particulates and deaths are higher in winter*"[1].

Monthly PM_{2.5} emissions in the Sydney region



Governments have known for nearly a decade that new woodheaters installed in urban areas have estimated health costs of thousands of dollars per heater per year. NZ tried to address the problem by substantially reducing the emissions limit on the AS4013 test for all new heaters in 2005. In areas where woodsmoke builds up, NZ also legislated sunset clauses for existing heaters in conjunction with subsidies to remove them, and bans on installing new wood heaters in houses that don't have them. Australia allowed the problem to get worse. **While traffic PM2.5 in Sydney fell to 14.4% of man-made PM2.5 emissions, domestic wood heater PM2.5 increased from 34.3% (2003 inventory) to 50.6% of man-made PM2.5 emissions (2008 inventory)**

Substantial health benefits from replacing wood heaters with alternatives. The substantial benefits of reducing woodsmoke in regional areas were demonstrated by the success of Launceston’s woodsmoke-reduction program, funded by the Federal Government. A University of Tasmania Media Release states: “In 2001, Launceston was the setting for a series of interventions to reduce wood-smoke pollution. Following the interventions wood heater prevalence fell from 66 per cent to 30 per cent of all households and the three month average particulate air pollution during winter was reduced by 40 per cent.

“The difference between deaths in 1994-2001 and 2001-2007 were statistically significant in men: differences of 11.4 per cent for all-cause mortality; 17.9 per cent for cardiovascular and 22.8 per cent for respiratory. “Results taken during the winter months (June – August) for males and females combined showed even higher reductions: cardiovascular 20 per cent; respiratory 28 per cent.”

<http://www.media.utas.edu.au/general-news/all-news/reduction-in-air-pollution-from-wood-heaters-associated-with-reduced-risk-of-death>

Other communities deserve similar improvements in health to achievements in Launceston. Now that the considerable benefits and cost effectiveness of Launceston’s \$2.05 million woodsmoke reduction program have been demonstrated, similar action is needed to protect the health of the many other Australians at risk from PM2.5 pollution. This will require government-funding, some of which could perhaps be recouped by “polluter pays” taxes, e.g. a levy on wood heater use.

NSW Greens Policy: polluter-pays, stricter standards, regular monitoring and reducing fine particulates. The NSW Greens air quality policy (revised Nov 2010) enshrines polluter-pays principles and reducing wood heater emissions by at least 90% on current levels. The policy notes that principles of environmental democracy require governments to carry out regular monitoring of major air pollutants and air toxins, publish the results, and estimate the cost to society of exposure to air pollution.

Installing new heaters damages the health of neighbours. There are several examples of neighbours suffering health problems when brand new wood heater(s) (that satisfy the current AS4013 limits) were installed nearby. Examples at <http://woodsmoke.3sc.net/experien> include a Pittwater family forced to sell and move house on medical advice and an elderly couple whose exposure to toxic woodsmoke from a new heater installed in 2010 triggered asthma and respiratory infections that needed multiple treatments with antibiotics. The couple had to seal many doors and windows and spent thousands of dollars on a new heating system because they can no longer use their flued gas heater, which, to sustain combustion, draws outdoor air (containing unhealthy levels of woodsmoke pollution) into the house. Information from the Woodheater CRIS (Table 1 below) shows that even heaters rated 1.5 g/kg (Table 1, option B) have unacceptable health costs. **The precautionary principle requires a moratorium on the installation of new wood heaters until models have been developed that satisfy an acceptable health-based standard.**

Table 1. Estimated annual cost of heating per household (selected locations) and estimated health costs compared to the cost of alternative heating (an efficient reverse cycle heat pump).

	Firewood Price (\$/tonne) ^a	Wood use tonnes ^a	Annual wood heating cost ^a	Annual health costs New wood heater ^b		Annual cost: whole-house heating with efficient heat pump ^c
				A	B	
Tasmania	\$150	10.28	\$1,540	NA	NA	\$500 - \$700
Sydney	\$380	3.43	\$1,300	\$7,938	\$6,044	\$150 - \$300
Wagga Wagga	\$180	4.08	\$730	\$4,057	\$3,089	\$300 - \$600
Melbourne	\$300	3.75	\$1,130	\$8,679	\$6,608	\$150 - \$300
Perth	\$270	3.09	\$830	\$7,151	\$5,445	\$150 - \$300

^aPrice, wood use and annual wood heating costs from Table 2.2 of the consultation RIS (CRIS) <http://www.scew.gov.au/strategic-priorities/clean-air-plan/woodheaters/index.html> ^bAnnual Health costs based on CRIS Table 3.2 – \$263,000 per tonne in capital cities and \$113,000 per tonne in Wagga. Real-life emissions calculated from Table 18, of the NSW OEH economic appraisal of wood heater control options. A: wood heaters rated < 3 g/kg have real life emissions = 8.8 g/kg; B: heaters rated < 1.5 g/kg have real life emissions = 6.7 g/kg).[2] ^cEfficient heat pumps in Sydney, Melbourne and Perth can deliver at 10 units of heat to a home for every unit of electricity used.[3]

Health costs of woodsmoke pollution not widely known. As reported in the SMH in Jan 2012: “*The smoky haze from wood fires is Sydney's biggest source of air pollution in winter, and wood smoke will add \$8 billion to the health budget by 2030, says an independent report commissioned by the state government and kept secret for six months.... The NSW Greens, who obtained the report under freedom-of-information laws, said the government should act quickly to minimise smoke.*” <http://www.smh.com.au/environment/wood-smoke-adds-billions-to-health-bill-says-report-20120127-1qlin.html>

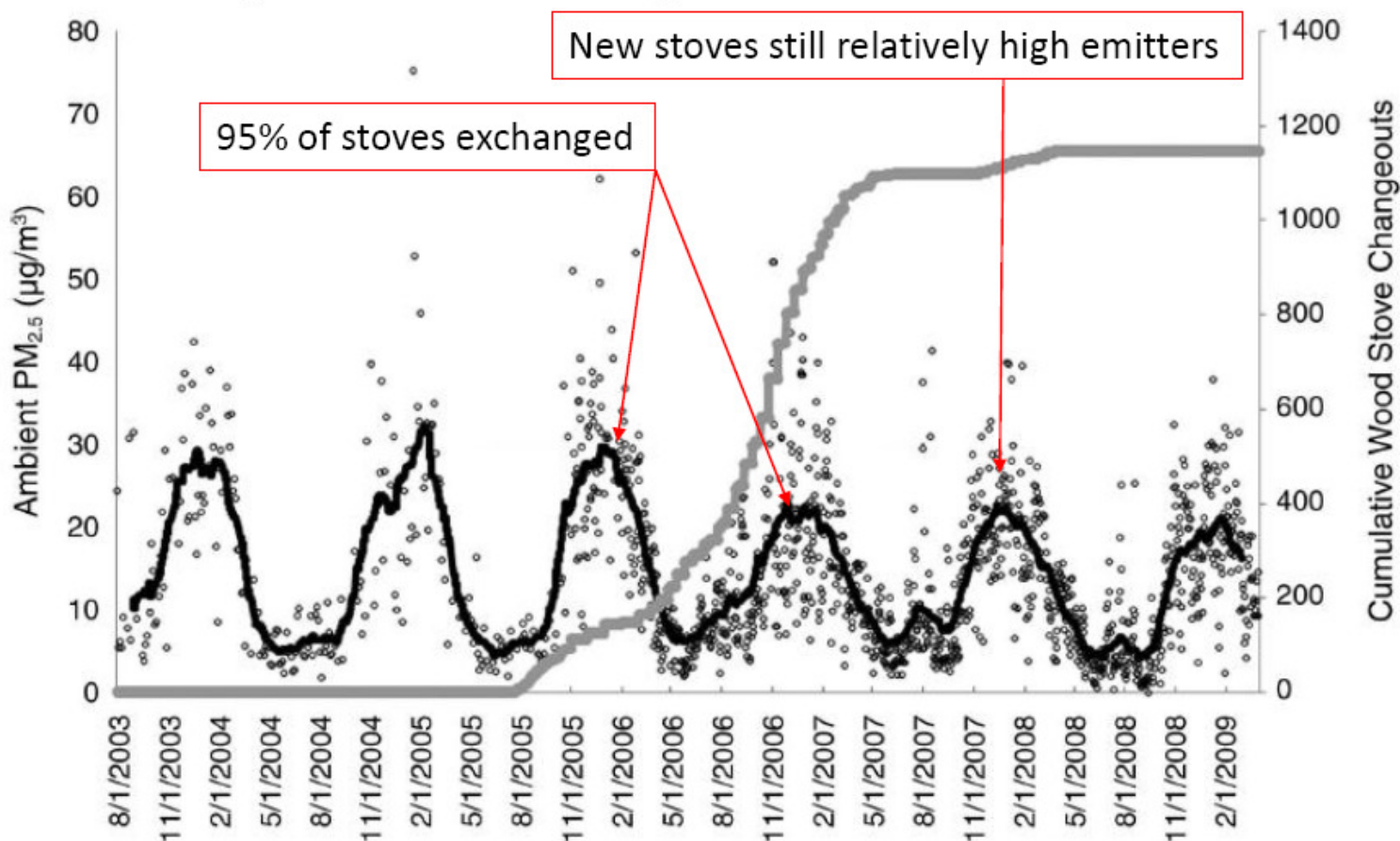
In some cases (e.g. when a new wood heater is installed next door and neighbours immediately suffer ill-health), the effect of woodsmoke is obvious. However, in many cases, people do not associate the increase in wintertime respiratory complaints as an effect of woodsmoke, until they move house and suddenly notice an improvement in health in winter – see: **submissions from people whose health improved after moving out of the central (worst polluted) area** <http://woodsmoke.3sc.net/armidalesubmissions>

Despite the \$8 billion health costs – equivalent to more than \$22,000 for every wood heater in NSW – few people understand the scale of the problem. Woodsmoke is a disproportionate source of PM_{2.5} in most Australian states, so an Australia-wide solution is required. Despite the exhortation in January 2012 to act quickly, the problem continues to worsen in NSW. From 2003-2008, traffic PM_{2.5} emissions in Sydney fell to 14.4% of man-made PM_{2.5} emissions, but domestic wood heater PM_{2.5} rose from 34.3% (2003) to 50.6% of man-made PM_{2.5} emissions (2008 inventory, published Oct 2012).

Many regional areas have much worse pollution than Sydney. Armidale Dumaresq Council’s valiant attempts to address the issue have had little effect. Measured PM_{2.5} pollution at Council Chambers is worse than in 1999 (<http://woodsmoke.3sc.net/woodsmoke-health-costs>). In Launceston, attention was focussed on replacing wood heaters with alternatives. The wisdom of this strategy was demonstrated when a study of real-life emissions showed new wood heaters have similar emissions to older models – <http://www.environment.gov.au/atmosphere/airquality/publications/emission-factor.html>

Change-out programs have failed to achieve satisfactory pollution. Armidale tried an alternative strategy of working with the wood heating industry, and held a ‘Change-out’ expo, which promoted wood heating, and led to new wood heaters being installed in houses that previously used other forms of heating. Current woodsmoke levels are higher than 1999 - <http://woodsmoke.3sc.net/woodsmoke-health-costs>

Libby, Montana stove exchange



Replacing old wood heaters with new ones increase profits of the wood heating industry, but has rarely achieved satisfactory results, despite substantial cost. For example, in Libby, Montana, a town of 2,600 people, virtually every existing wood heater was removed. Most were replaced by new wood heaters at a cost of over \$2.5 million (more than Launceston's \$2.05 million, which reduced wintertime PM2.5 by 40% in a much larger city). Indoor pollution in wood heated homes (where smoke from older heaters may have been escaping into people's homes) was reduced by 72%, but there was only a small 28% reduction in outdoor air pollution (see graph above). Canadian research found increased risk of chronic obstructive pulmonary disease from exposure to woodsmoke at levels as low as 5 ug/m³[4], and significant impacts on blood vessel health if otherwise healthy volunteers are exposed to 10 ug/m³ of woodsmoke for 1 week.[5] The many days of high woodsmoke pollution in Libby, not just above 10 ug/m³, but the Australian advisory standard of 25 ug/m³ represent a totally unacceptable imposition on health in Australian cities where alternatives such as improved insulation and efficient heat pumps represent an affordable, non-polluting alternative that, according to the UN Environment Program and World Meteorological Organisation, will reduce global warming as well as improve health.[6]

The lack of effective regulation in Australia is illustrated by the remarkable claim by the AHAA, in an article about health and outdoor air quality in Canberra, that Libby improved its air quality by "more than 80%." In Canberra, 70% of particulate pollution comes from wood heaters (NPI data), despite only 2.3% of residents using wood as the main form of heating (ABS data). With so few ACT residents actually using wood heating, most people would interpret the claimed "more than 80%" reduction (in an article about outdoor air pollution in Canberra) as a reduction in outdoor pollution. If (as would appear to be the case) such claims mislead prospective purchasers about emissions from new woodheaters (which, according to the CRIS have estimated health costs of thousands of dollars per year), the Government should recommend remedial action to prevent similar problems in future, as well as compensation for affected parties.

Public misunderstandings & lack of information hinder policy development. Misleading information has been a highly effective counter to the recommendations by the Australian Lung Foundation (ALF) to: *"use alternative methods (instead of wood heaters) for climate control, including insulating and improving the energy efficiency of homes, flued gas and electric heaters and energy efficient house design"* <http://lungfoundation.com.au/wp-content/uploads/2012/06/Woodsmoke-The-Burning-Issue.pdf> Similarly, the American Lung Association *"strongly recommends using cleaner, less toxic sources of heat. Converting a wood-burning fireplace or stove to use either natural gas or propane will eliminate exposure to the dangerous toxins wood burning generates including dioxin, arsenic and formaldehyde"* <http://www.lungusa.org/press-room/press-releases/cleaner-alternatives-for-winter-heat.html> A Committee of 50 scientific experts from the UN Environment Program and the World Meteorological also recommended that developed countries should phase out log-burning heaters - <http://woodsmoke.3sc.net/greenhouse> Prof Piers Forster, Coordinating lead author of the IPCC report chapter "Changes in Atmospheric Constituents and in Radiative Forcing", which examines the scientific evidence on what changes in the atmosphere are causing global warming, stated that *"Reducing emissions from diesel engines and domestic wood and coal fires is a no-brainer as there are tandem health and climate benefit"*

Claim that new wood heaters meet "most stringent Australian Standards" lulls purchasers into a totally false sense of security. A Federal Government Scoping Paper states: *"Governments have been unable to achieve improvements to national wood heater emission standards due to industry veto in Standards Australia processes. The emissions standard was last revised in 1999 and the current level of 4 grams of particles per kilogram of wood burnt is well above levels achievable by latest technologies and the emissions standard set in New Zealand (ie. 1.5 g/kg) -* http://woodsmoke.3sc.net/files/EHPC_NationalApproach_Reducing_WoodheaterEmissions_ScopingPaper.pdf

The NSW Government's Discussion Paper on Woodsmoke Control Options notes the success of this misinformation campaign: *"According to data supplied by the Australian Home Heating Association, sales of wood heaters across Australia grew 33% in 2011."* With estimated health costs of the average new wood heater installed in Sydney at \$4436 per year – many times higher than the benefit of allowing such heaters to be installed – Australians will end up paying a very high price for the continued failure to address this issue.

Urgent measures needed to address this problem

Rather than allow the current situation to continue, the Federal Government should recommend immediate efforts to start addressing the problem, while seeking agreement on longer-term solutions. The NSW Greens Air Quality Policy (revised Nov 2010) contains many useful policy suggestions.

21. *Measure and report PM2.5 in all areas that may exceed the PM 2.5 standard.*
22. *Update air particle monitoring as a matter of urgency so that PM2.5 is measured according to the NEPC reference method*
23. *Introduce policies to reduce urban and rural air emissions from point sources (large emitters) and diffuse sources (small emitters) to achieve the NEPM PM2.5 standard in all locations as soon as possible;*
24. *Adopt further measures to significantly reduce PM2.5 pollution below the current NEPM standards*
25. *To reduce the concentration of PM2.5 regarding wood heaters the NSW Greens support:*
 1. *reducing wood heater emissions by at least 90% on current levels;*
 2. *a new health-based standard for wood heaters;*
 3. *prohibition on new heaters that do not meet this standard;*
 4. *a moratorium on installation of new wood heaters until the new health based standard has been developed;*
 5. *the gradual phasing out from urban areas of all wood heaters that do not comply with the new health based standard;*
 6. *research and development of affordable non polluting domestic heaters.*

National Monitoring and Reporting System. The Final Impact statement of the 1998 Air Quality NEPM (National Environment Protection Measure) expressed the ultimate aim of “*providing equivalent protection for all Australians, wherever they live*”. But with PM2.5 generally considered the most health-hazardous pollutant (estimated health costs of \$235 per kg of emissions in capital cities and \$113 per kg in smaller regional cities such as Wagga, Table 1) and most locations that exceed the PM2.5 standard lacking NEPM monitors, the current NEPM cannot achieve this aim. The lack of NEPM monitors in areas with high PM2.5 pollution is illustrated by the 2010 NSW NEPM report which states that breaches of the PM2.5 24-hour reporting standard were recorded on one day at one PM2.5 monitoring site in NSW. Yet in Armidale (which lacks a NEPM monitor, but the local council measures PM2.5 with a DusTrak calibrated by EPA TAS) had 37 breaches of the 24-hr PM2.5 standard in 2010. In Tasmania, Geeveston, a small town with 277 houses, exposed to smoke from domestic wood heaters had 99 exceedences of the PM2.5 standard, the vast majority due to emissions from domestic wood heaters.

Tasmania’s BLANKET system (Base Line Air Network EPA Tasmania, epa.tas.gov.au/epa/blanket-reports) demonstrates that PM2.5 monitoring need not be expensive. BLANKET uses a series of DusTrak monitors calibrated for woodsmoke. The results are available in real-time. The accuracy of the system is verified by the co-location of NEPM accredited monitors at some sites. With DusTrak monitors costing less than \$10,000, and real-time connections to the internet readily available, there is no longer a financial barrier to measuring and reporting PM2.5 in most locations where the PM2.5 standard is likely to be exceeded.

Although NEPM monitoring is normally carried out by the States, it would be expedient for the Federal Government to set up the PM2.5 monitoring for areas that have fallen through the cracks in the NEPM. Once the system has been established, the States could take over, or simply delegate PM2.5 measurements at new sites to the Federal Government. The \$8 billion health costs of woodsmoke in NSW (and no doubt similar per capita costs in other States) is a compelling reason for co-ordinated National action, rather than the likely additional expense and delays if individual states have to research the issue and reinvent the wheel several times over.

National Woodsmoke Campaign. To help people understand the need to reduce woodsmoke pollution, as well as counter misleading information from the AHHA, a National Woodsmoke Education Campaign is needed. It is important to increase awareness nationally, so that all Australians understand that the average new wood heater emits more PM2.5 pollution in 10 hours than the average new car, or new diesel 4WD or sports utility vehicle does in a year. It is also important for people to understand:

- Which areas have high pollution. In previous years, air pollution was included in weather reports. Sydney also issued voluntary ‘Don’t light tonight!’ requests on days when high particulate pollution was forecast. By investing a small amount of money measuring PM2.5 in areas where it is expected to be high,

voluntary ‘Don’t light tonight!’ information requests could be issued in conjunction with weather reports for all areas with high PM2.5 pollution. This would increase understanding of the issues.

- People should also be informed that there is no safe level of PM2.5 pollution, and that wood smoke contains the same and similar chemicals to tobacco smoke; in fact it appears to cause about 12 times as many mutations and tumours as the same amount of tobacco smoke
- There are no “stringent Australian standards” because the wood heating industry rejected changes recommended 15 votes to 4 by the majority of the Australian Standards Committee.
- The Australian Lung Foundation, the American Lung Association both recommend that, where possible, households use alternatives to wood heating – see woodsmoke.3sc.net
- Good neighbours don’t smoke - wood heater emissions have been found to affect the health of neighbours. Neighbours should therefore be consulted before wood heaters are installed and simple criteria developed (e.g. medical evidence of adverse health effects, or a chimney lower than the top of the windows of neighbouring houses) to identify cases where currently-installed wood heaters pose a risk to an unacceptable risk to a neighbour’s health and should therefore be removed. In a survey in Armidale, nearly 60% of respondents without woodheaters had experienced problems from wood heater smoke from other houses.
- As well as heart and lung diseases, people need to understand that wood smoke and PM2.5 pollution have been associated with many other problems including low birthweight and genetic damage in babies, reduced IQ on starting school, middle ear infections, and reduced cognitive function in the elderly. In developing countries, children whose mothers cook with wood (as opposed to kerosene) stoves have reduced IQ, memory and poorer social skills.[7] Concerns have also been expressed in developed countries such as the US. In Utah, where PM2.5 pollution tends to be higher during winter months for various reasons, such as more frequent and severe temperature inversions, more space heating, including wood burning, a group of Utah doctors are advising prospective parents to wait until the inversion season is over before trying to conceive - <http://www.sltrib.com/sltrib/news/55825755-78/pollution-utah-birth-studies.html.csp>

The Federal Government should replace Options 1 to 9 with Option 10: adoption, as a matter of urgency, of the most cost effective measures evaluated in the NSW Government’s Woodsmoke Control Options Report. The table below summarises the costs and benefits of various ways of reducing woodsmoke.

	Health Benefit \$million	Cost \$million	Net Benefit \$million
4) Phase out at sale of house	\$4,015	-\$36	\$3,978
2) Ban on heater sales	\$2,206	-\$134	\$2,071
7) Licensing fees	\$1,267	\$11	\$1,278
6) Sales tax on new wood heaters	\$1,049	-\$1	\$1,048
9) Cash incentive phase out	\$879	-\$12	\$867
8) Levying an excise/tax on biomass fuels	\$419	\$36	\$455
5) Fuel moisture content regulations	\$399	-\$33	\$366
3) Emission standards (3g/kg, 60% efficiency)	\$301	-\$3	\$298

Source: Tables 26 and 28, AECOM Office of Environment & Heritage: Economic Appraisal of Wood Smoke Control Measures - Final Report, 29 June 2011

Four of the first 5 measures – phasing out wood heaters (except pellet stoves with emissions rating of less than 1 g/kg) when houses are sold, a ban on sales of new log-burning heaters, licensing fees, and cash incentives to remove wood heaters are all highly cost effective, with estimated benefits 20 to 100 times greater than the costs. In NZ, restrictions on wood heaters have led to a flourishing pellet heating industry and the development of cleaner-burning wood heaters. As in Christchurch, NZ, one possible exception to a ban on new log-burning heaters could be for models with emissions rating less than 1.0 g/kg installed as replacement for existing wood heaters. This would allow people who don’t want to use alternatives to upgrade to a cleaner model and also raise some sales tax money, which, together with the annual levy on wood heater use, could be used to fund the cash incentive to phase out other wood heaters. Some of the above measures would probably require implementation by individual states, but if Federal funds were made available to cover the cost, and targets set for speed of implementation, there would be substantial benefits at

both state and Federal level. The public interest would therefore be best served if agreement could be reached on swift implementation of these cost-effective measures.

The measures described above are necessary because efforts to develop a health-based standard for Australian wood heaters were abandoned after the wood heating industry vetoed the recommendations of the Australian Standards Committee. The extent to which the Australian wood heating industry has been allowed to regulate itself was explained in an article in by Prof John Todd in "Clean Air and Environmental Quality" *"through a series of circumstances, largely unplanned by government authorities, a situation has developed where the industry association, which represents some, but not all, Australian wood heater manufacturers, has a veto on the emission test method, a veto on the emission and efficiency limit (unless individual states choose to set their own limits in legislation), runs the certification process covering all manufacturers and both test laboratories, and participates in the auditing of the whole process."*

Self-regulation, by an organisation that misrepresents a 28% in Libby, Montana as a "more than 80% reduction" is not in the public interest. Over the past 20-30 years, new standards have led to a 99% reduction in emissions from diesel cars and 4WD. The Government had no qualms about mandating the new Euro 5/6 standards, despite adding about \$980, or 2.5 per cent to the cost of a \$40,000 diesel vehicle <http://www.news.com.au/national/car-pollution-crackdown-to-save-lives/story-e6frfkvr-1226073347555> The new PM2.5 limit is .005 g/km, i.e. about 0.1 kg for a vehicle travelling 20,000 km per year. In 2008, cars, trucks and buses emitted 14.4% of man-made PM2.5 emissions in Sydney. Wood heaters emitted 50.6%. In order to redress the balance and protect public health, the Federal Government should make immediate recommendations about appropriate measures to address this situation as a matter of urgency.

Assist people who experience problems with other people's woodsmoke. A survey in Armidale, NSW found that nearly 60% of people without woodheaters had experienced problems with wood heater smoke from other houses. As well as providing subsidies to replace wood heaters with alternatives, any 'polluter pays' taxes on woodheater use could provide funds to help resolve problems experienced by people who do not use wood heating. Assistance should also be provided for medical costs of people whose health has been affected by woodsmoke.

One form of assistance could be to provide subsidies for HEPA filters in areas where woodsmoke levels are detrimental to public health. For healthy adults *living in areas with average PM2.5 levels of 10 ug/m³ (less than average woodsmoke levels in Armidale)*, HEPA filters were described as an inexpensive way to reduce cardiovascular disease risks. In the study, use of two HEPA filters (costing about \$125 each) in the living and bed rooms reduced average concentrations of fine particulates inside homes by 60% and woodsmoke by 75%, and their use was associated with improved endothelial (inner lining of the blood vessels) function (a 9.4% increase in reactive hyperemia index) and decreased inflammation (a 32.6% decrease in C-reactive protein), both predictors of cardiovascular morbidity. Ryan Allen, PhD, assistant professor, Simon Fraser University, said: *"Reducing air pollution appears to provide health benefits even if the pollution levels are already relatively low."*[8]

Research and development of affordable non-polluting domestic heating.

If the wood heating industry is to flourish in the long-term, without compromising health or air quality, new non-polluting heaters must be developed. New technology, including gas boosting when the firebox is below the temperature required for optimum combustion (as well as for initial lighting of the fire) suggests that this might be feasible. The huge improvement in PM2.5 emissions from diesel vehicles suggests that, when governments are prepared use regulations to set health-based standards, improvements soon follow to meet the required standards.

In coastal cities, efficient heat pumps are perhaps the most affordable way of heating homes. Christchurch, NZ, offered incentives to replace wood heaters with efficient heat pumps – household electricity consumption increased by just 1%. Compared to the cost of buying firewood, this represents a substantial saving for the average family. The report describing the results of the Clean Heat Program explains: *"Additionally, in order to receive subsidies from ECan, households were retrofitted to meet NZ Building Code standards for ceiling and underfloor insulation, potentially reducing the use of other forms of electrical heating, such as the bedroom heater."*

Big improvements in efficiency for modern heat pumps were also noted by Matthew Wright, executive director of Beyond Zero Emissions. In 2010, he used the equivalent of 3000 kWh of gas to heat his home in Melbourne. The following year, he installed air conditioners. His home was warmer, yet measured

electricity consumption for the heat pumps of only 328 kWh, a tiny fraction of what can be generated from the average PV system, leading to tiny running costs compared to the previous gas heating system. -

<http://www.climatespectator.com.au/commentary/why-i-have-six-air-conditioners>

Consider additional infrastructure funding. Governments currently accept responsibility for helping to fund replacement infrastructure such as roads and libraries. With measured PAH pollution at substantially less than half Armidale's wintertime pollution associated with genetic damage in babies, a 5 point reduction in IQ when starting school and increased risk of behavioural problems such as ADHD, upgrading home heating 'infrastructure' would appear to be far more important for public health and welfare than providing fast internet to households (when current speeds are adequate for most uses except downloading movies), or new library facilities.

Need for swift and comprehensive action. Given all the above evidence, we hope that the Federal Government will take swift and comprehensive action such as outlined above in the NSW Greens Air Quality Policy to reduce the public health damage from the large proportion of PM2.5 emissions from domestic wood heaters. More importantly, if these measures can't be implemented immediately, immediate temporary measures such as the introduction of a moratorium on the installations of new wood heaters should be initiated (ideally before the start of the 2013 winter) to prevent further worsening of the problem while long-term solutions are under development.

RESPONSES to QUESTIONS

1. What is your view of the wood heater industry in Australia? Are there specific aspects of the industry that require attention? Please provide details.

The NSW Greens believe that wood heater emissions should be reduced by at least 90% on current levels. This should be achieved by:

2. a new health-based standard for wood heaters;
3. prohibition on new heaters that do not meet this standard;
4. a moratorium on installation of new wood heaters until the new health based standard has been developed;
5. the gradual phasing out from urban areas of all wood heaters that do not comply with the new health based standard;
6. research and development of affordable non polluting domestic heaters.

2. Can you provide evidence of new or different operational or marketing paradigms that would affect the stated view? People have a right to clean air, and to expect their health to be protected from dangerous toxins. The CRIS should be revised to explain and enshrine these rights.

3. Do you consider wood heater emissions to be a significant issue relative to other forms of air pollution?

See NSW EPA graph on page 1 of this submission.

4. Do you agree with the conclusions provided in this section? If not, please provide reasons

"Secondly, there is no clear level of particulate emissions below which adverse health outcomes in communities would not be observed. This means that there is no "safe" level of particulate pollution and that further improvements in air quality below the standards currently set in the Air Quality NEPM will continue to provide public health benefits. There are therefore significant health benefits to the community in implementing national policy options to reduce particulate emissions from all sources (including wood heaters) for all airsheds across the country."

The above conclusions are true, but inconsistent with Options 1 to 9, which allow the installation of new heaters with estimated health costs of thousands of dollars per year, and no discussion of offsetting benefits.

5. Are there other variables that have not been considered or not been attributed sufficient weight in the discussion?

Table 1 on page 2 of this submission shows estimated annual health costs of a new wood heater amount to many thousands of dollars per year. If “sufficient weight” had been attributed to health costs, the CRIS would justify the massive health costs of installing new heaters by listing and discussing offsetting benefits equal or greater than the estimated health costs.

6. Do you agree that the current policy measures for the abatement of wood heater emissions are not successful in realising the policy objectives? Can you provide other evidence to support this?

See graph on page 1 of this submission.

7. Which policy delivery method do you believe should be adopted by government and why?

With the health costs of a year’s delay in introducing effective regulations costing close to half a billion dollars, the most important measure is to protect public health as quickly as possible from the current unacceptable situation. Whatever measures can be introduced quickly and effectively should be used to solve this problem. Commonwealth legislation, a NEPM or referral of powers could all be effective. Interim measures should be introduced by whatever delivery method is quickest, with other delivery methods used if they provide better long-term public-health protection,

8. Do you agree that the policy measures listed for the abatement of wood heater emissions will be successful in realising the objectives? If not, please provide your reasons including supporting evidence.

9. Do you believe that the “nudge” programs will be helpful in reducing wood heater emissions?

10. Are there other measures that are not listed in the document that should be considered?

We believe that the major objective should be to protect public health. The NSW EPA Woodsmoke Control Report estimates that woodsmoke is an \$8 billion health problem in NSW, but that the 3 most cost-effective measures could reduce health costs by 75%. These measures should not just be “considered” but implemented immediately throughout Australia, unless there are clear, significant benefits of not acting immediately that outweigh the \$1 billion health costs per year of delay. Options 1 to 9 will be lucky to reduce NSW health costs by \$1 billion over 20 years. This will leave significant numbers of people suffering unacceptable levels of unnecessary and avoidable harm, so these Options should be abandoned in favour of the much greater benefits from the 3 most cost-effective measures in the NSW EPA Woodsmoke Control Report.

11. Which of the listed policy combinations do you favour in addressing a reduction in wood heater emissions? Why do you favour these measures?

We support ‘Option 10’: adoption, as a matter of urgency, of the most cost effective measures evaluated in the NSW Government’s Woodsmoke Control Options Report. The table below summarises the costs and benefits of various ways of reducing woodsmoke.

	Health Benefit \$million	Cost \$million	Net Benefit \$million
4) Phase out at sale of house	\$4,015	-\$36	\$3,978
2) Ban on heater sales	\$2,206	-\$134	\$2,071
7) Licensing fees	\$1,267	\$11	\$1,278
6) Sales tax on new wood heaters	\$1,049	-\$1	\$1,048
9) Cash incentive phase out	\$879	-\$12	\$867
8) Levying an excise/tax on biomass fuels	\$419	\$36	\$455
5) Fuel moisture content regulations	\$399	-\$33	\$366
3) Emission standards (3g/kg, 60% efficiency)	\$301	-\$3	\$298

Source: Tables 26 and 28, AECOM: Economic Appraisal of Wood Smoke Control Measures - Final Report, 29 June 2011 [2]

12. Are there policy combinations that you would not support? Please provide reasons.

Allowing the installation of any new heaters with estimated health costs of more than \$500 per year.

13. Do you believe the base case has been correctly identified, or are there other variables that need to be considered?

This base case is the cost of “Business as Usual”, compared to the cost of no pollution from wood heaters. This has not been identified.

14. Have all health, environmental, economic and social impacts been identified? If not, please suggest others that need to be included. Has sufficient weight been given to these impacts within their relationship to the policy options being proposed?

There CRIS needs to provide a cost-benefit analysis for installing an individual wood heater, based on similar information to Table 1, but with additional costs to cover the effect on lifestyle of neighbours, the cost of additional sealing for homes affected by woodsmoke and other expenses such as replacing gas heaters and cost of being forced to move house. Some of these experience and costs are described at <http://woodsmoke.3sc.net/experien>

15. Have all key assumptions been correctly identified and included in the analysis? If not, please suggest others that need to be included.

The key assumptions that have not been identified are 1) the right to clean air and 2) the right of nearby residents not to be exposed to dangerous toxins likely to damage health 3) the precautionary principle 4) that polluting activities should be tolerated only if the benefits can be shown to exceed the cost and there are no better alternatives with similar benefits without major health costs and 5) that people whose health has been damaged by other people’s pollution have a right to compensation.

16. Do you agree with the conclusions? If not, please provide reasons.

All the policies outlined in this CRIS and many more have been tried in NZ. NZ has an effective audit system. Otago councils also required all heaters rated more than 1.5 g/kg or efficiencies less than 65% to be removed by 1 Jan 2012. There has, however, been little improvement in air quality, with Cromwell (pop 4896), Alexandra (pop 4824), Arrowtown (pop 2400) and Clyde (pop 900) – all small towns with little or no traffic or industry – having respectively 29, 42, 24, and 7 exceedences of the PM10 standard in 2012, compared to 33, 41, 25 and 29 in 2011 <http://cleanairnz.com/2013/04/07/hey-central-otago-whats-plan-b/>

Overall Conclusion. There is no doubt that a National Regulatory Approach to wood heater emissions is required. However, Options 1 to 9 are totally inadequate to deal with a \$20 to \$24 billion health problem. They should be replaced by the three most cost effective measures in the NSW Woodsmoke control Options report, introduced as interim measures to protect public health while a formal revised RIS is being prepared. The National Regulatory Approach should include measures to protect the public health and to cover the medical costs of people whose health has been damaged by wood smoke. This will require significant funds which could be provided by a levy on wood heater use.

Additional Information:

1. Morgan, G., *Daily mortality and air pollution in Sydney*, in *Proceedings of the Health & Urban Air Quality in NSW Conference*. 1996, NSW Health Department: Sydney.
2. NSW OEH, *Economic Appraisal of Wood Smoke Control Measures*. 2011, AECOM Australia Pty Ltd. Prepared for the Office of Environment and Heritage. Available at: <http://www.environment.nsw.gov.au/woodsmoke/smokecontrolopts.htm>.

3. Wright, M., *Why I have six air conditioners*, in *Climate Spectator*.
<http://www.climatespectator.com.au/commentary/why-i-have-six-air-conditioners> (accessed 13 March 2012). 2011.
4. Gan, W.Q., et al., *Associations of Ambient Air Pollution with Chronic Obstructive Pulmonary Disease Hospitalization and Mortality*. American Journal of Respiratory and Critical Care Medicine, 2013. **187**(7): p. 721-727.
5. Allen, R.W., et al., *An Air Filter Intervention Study of Endothelial Function among Healthy Adults in a Woodsmoke-impacted Community*. Am. J. Respir. Crit. Care Med., 2011. **183**(9): p. 1222-1230.
6. UNEP/WMO, *Integrated Assessment of Black Carbon and Tropospheric Ozone. Summary for Decision Makers*. UN Environment Program & World Meteorological Organization.
http://www.unep.org/dewa/Portals/67/pdf/Black_Carbon.pdf (accessed 13 March 2012). 2011.
7. AAGG. Australian Air Quality Group. PAH. <http://woodsmoke.3sc.net/pah>. 2013 [cited.
8. Kell, B. *HEPA filters reduce cardiovascular health risks associated with air pollution*. . 2011 [cited.