

# Submission to the Inquiry on Home Electrification, Senate Economics Reference Committee

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## Introduction

Doctors for the Environment Australia (DEA) is an independent, self-funded, non-government organisation of medical doctors and students in all Australian states and territories.

DEA's work is based on the premise that humans need a future with clean air and water, healthy soils capable of producing nutritious food, a stable climate, and a complex, diverse and interconnected humanity whose needs are met in a sustainable way. We are therefore interested in environmental protection and restoration to promote human health and social stability.

Our interest in home electrification is primarily the health benefits from avoiding the combustion products of indoor gas use. The burning of gas indoors for cooking and heating, once thought to be a clean and efficient energy source, is now recognised to cause important health problems and is no longer regarded as a healthy choice. The combustion products include noxious gases with direct human health effects, and carbon dioxide with indirect human health effects due to climate disruption. These are in response to Terms Of Reference K.

### **There are several lines of evidence of health problems:**

Cohort studies following children living in home with gas stoves, compared to children living with electric stoves, show an increased prevalence of asthma. In a systematic review of all available research in 2013 the children living in homes with gas stoves had 42% increased risk of current asthma. (1) This has been interpreted by Australian researchers to imply that 12% of childhood asthma can be attributed to gas stove exposure.(2)

A controlled trial of flued versus unflued heaters in NSW classrooms showed increased respiratory symptoms during the weeks when "low NOx" unflued heaters were in use. The older heaters not designed to be "low NOx" would presumably have been worse. (3)

The US EPA conducted an exhaustive review known as an "Integrated Science Assessment" in 2016 in which results from epidemiology, human exposure studies, toxicology, and animal exposure studies were combined. They concluded that short term exposure to nitrogen dioxide is causative of respiratory disease. This is an important point, as many associations are not cause and effect but in the case of short term nitrogen dioxide exposure and respiratory disease the weight of evidence led to a causal determination.(4)

### **Burning gas releases harmful combustion products:**

- Nitrogen dioxide, released in the gas flame when room air is oxidized.
- Formaldehyde, carbon monoxide and benzene that form from incomplete combustion of hydrocarbons. Benzene is a carcinogen and exposure should be kept as low as possible.

A harm minimization approach for the 5 million Australian homes with gas appliances requires public education about improving ventilation whenever a gas appliance is used, and phasing out the use of indoor gas appliances. A first practical step is to prevent new homes from being connected to reticulated gas to stop making the problem bigger. Just as building standards specify health based minimum requirements for sanitation, ventilation, and lighting there are strong health arguments for not permitting indoor gas combustion in future dwellings.

## **Equity issues**

A trend has already started for well informed and wealthier households to switch their gas appliances to electric alternatives, gaining both a health benefit and in the longer term a financial benefit from avoided gas bills. This could lead over time to less well off families trapped in the situation of enduring poorer health and higher bills if they cannot afford to transition away from gas, as there is an upfront cost balanced against longer term savings. This is an appropriate area for government intervention such as means tested low interest loans or subsidies to assist in the transition. Such schemes must consider both home owners and renters.

Another barrier to switching fuel source is the gas disconnection fee for households to abolish their gas connection. In NSW the fee is over \$1100 to remove a meter. The much cheaper option to turn off and lock the meter seems not to be offered. The disconnection fee may well contravene competition rules as it is a barrier to competition between gas and electricity networks as domestic energy suppliers.

## **Practicalities**

DEA has produced fact sheets for use by our members during consultations with patients who have asthma. The parents of asthmatic children are often keen to take steps to make their home environment safer: simple measures such as opening a window, turning on a range hood (if it is ducted to the outside), using the back burners for which the range hood is more effective, and getting a cheap single hob induction cooker to avoid gas use when only one pot is needed. These tips make a difference while waiting for the opportunity to remove their gas stove. People who have made the switch to an induction stove say it cooks just as well, and is so much easier to clean.

## **The broader context**

On climate grounds the combustion of fossil gas has to cease to reach zero by 2050. Every domestic use of gas has a better electric alternative, and even if the reticulated network could be supplied by carbon neutral biogas the indoor air health problems would remain. There is a clear pathway for the electricity grid to be powered by 95% wind and solar, with gas peaking plants providing the last few % of supply on the rare night without wind. This is a much more high value use of available gas reserves than wasting them every day in domestic appliances.

The climate disruptive effects of fossil fuels, including fossil gas include substantial health threats from extreme heat, bushfires, floods, and expanding ranges of tropic diseases. We assume the committee is already aware of these indirect benefits of home electrification so will not expand on them further.

## **Recommendations**

1. Amend planning rules to not allow the connection of new dwellings to reticulated gas.
2. Fund a public education campaign on how to minimise harms from current indoor gas use.
3. Decide on an end date for the sale of gas appliances, well in advance of decommissioning the gas network.
4. Abolish the gas network disconnection fee.
5. Means-tested financial assistance for residents to replace gas appliances with electric alternatives, through the 2023 Federal budget Household Energy Upgrades Fund (e.g. direct subsidies, rebates and/or no-interest loans)

## References

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