

24th March 2016

Ms Kylie Hargreaves
Deputy Secretary – Resources and Energy

NSW Department of Industry
GPO Box 5477
Sydney NSW 2001
Australia



By email to: kylie.hargreaves@business.nsw.gov.au

Dear Kylie,

Re: The Economics of Household Fuel Choice

We wish to draw your attention to research by the ATA into the economics for NSW households of gas versus efficient electric appliances; as well as a survey considering trends in appliance choice.

The Alternative Technology Association

Founded 36 years ago, the Alternative Technology Association (ATA) is a national, not-for-profit organisation with 6,000 members who are largely residential consumers of energy, water and transport. ATA presents a two-fold perspective as an energy consumer advocacy organisation.

ATA brings experience in energy policy, markets and technology and with the continuing support of Energy Consumers Australia, is a strong and informed voice for energy users.

In addition, ATA also speaks with authority on behalf of the growing portion of the consumer base that has an active interest in demand side participation.

The Economics of Gas & Electric Appliances has changed

The new LNG export market is raising wholesale gas prices which are flowing through to higher retail prices. At the same time, electrical technology to heat air and water is increasingly efficient (using only 1/7th to 1/5th of the metered energy of the most efficient equivalent gas appliance) and is continuing to reduce in capital cost.

As such, efficient electric appliances for space and water heating now typically have lower running costs than efficient gas appliances.

With the support of Consumer Advocacy Panel, ATA undertook a detailed analysis of the economics of modern, efficient gas and efficient electric appliances for space heating, water heating and cooking for residential consumers.

The analysis was conducted across jurisdictions, climate zones, gas pricing zones and household types to accurately understand potential costs and benefits in detail. Our research looked at all ownership costs and compared household gas and efficient electric options.

To account for uncertainty of future gas prices, a range of potential gas prices were considered.

Our research stands as the authoritative body of work on the economics of fuel choice for homes in the National Electricity Market.

[Research findings](#) were released in late 2014, with the headline conclusions being:

- it is no longer economic for any new, or existing all-electric, home, located anywhere in Australia, to connect to mains or bottled gas – as compared with installing and operating efficient electric appliance alternatives;

For example, taking into account all ownership costs over 10 years, a new home in Sydney would save over \$7,000 (on a net present value basis) by choosing to go all electric with efficient electric appliances, as compared with connecting to the mains gas network for space heating, hot water and cooking (see report page 17). Any higher capex of the electric option is paid back in less than 5 years.

- that for the many existing dual-fuel homes located in coastal NSW (like other warmer climate jurisdictions of QLD and SA) progressively switching all appliances from gas to efficient electric is more cost effective than staying on gas;

Where a standard sized existing Sydney home uses mains gas for hot water heating and cooking, and where one of these appliances is near the end of its expected lifespan, they would save over \$1,000 by switching to efficient electric appliances and disconnecting from the gas network. Any higher capex of the electric option is paid back in less than 10 years.

- that for a large number of existing dual-fuel homes located in cooler climates of NSW (and ACT and Victoria), switching some appliances (including space heating) from gas to efficient electric as they reach the end of their asset life is more cost effective than staying on gas.

In inland cold NSW, for example Orange (see page 53), where a standard sized existing home already uses gas connection for space heating and their gas furnace is within 5 years of the end of its life, they would save \$1,090 instead installing three reverse cycle air conditioners to provide the same service level. The payback is between 5-10 years.

Our analysis assumes no solar photovoltaic (PV) system in place – which over 200,000 homes in NSW currently have. The economics for these solar households is significantly better.

Key recommendations deriving from our research included:

- that gas network businesses be required, if not by the National Energy Rules then by requirements of the Australian Energy Regulator in the course of the regulatory pricing determination process, to forecast disconnection of existing gas customers and analyse their competitive position against electricity;
- **that energy concessions are improved to address the impact of energy bills on cost of living for vulnerable and disadvantaged consumers;**
- **that better information is made available for consumers regarding the cost of owning and operating gas and electric appliances;**
- strengthening the regulatory oversight of the marketing of gas as cheaper and more efficient than electricity;
- that public housing energy policy is brought in line with cost effective energy opportunities; and
- that businesses intending to extend gas networks into new housing developments are subject to a *Regulatory Investment Test* to ensure the development is in the long term interests of consumers.

ATA has been funded by Energy Consumers Australia in 2015/16 to pursue the recommendations in the report.

Residential Gas Demand : Poised for Further Declines

ATA conducted a survey of small energy consumers in late 2015 regarding residential gas preferences. Among the nearly 1,000 respondents, the survey included 159 from NSW. A report is imminent.

Our survey demonstrates that residential consumer preferences regarding gas and electricity choices are changing, as demonstrated by the following:

- Most (62% of the nearly 1000 respondents) say they are either “much less likely” or “less likely” to choose a gas appliance now compared with 5 or 10 years ago.
- Among home-owners relying on gas for space heating (mains or LPG) who have investigated their options, 33% have a plan to replace their main appliance when it fails with something different (mostly efficient electric), compared with 7% who plan to replace it with like-for-like.

- 79% of those who replaced a hot water system in the previous 12 months replaced it with something different, often heat pumps. Only 34% of people who replaced their hot water system continue to rely mainly on gas (mains or LPG) for heating water, compared to 54% who didn't replace their hot water system.
- There is considerable enthusiasm for electric induction cooking.

A significant proportion of gas users is making plans to switch appliances away from gas, although relatively few have already done so.

Gas Demand Could Halve

Melbourne Energy Institute, part of the University of Melbourne, examined the future of domestic gas across the entire interconnected eastern-Australian gas market in a 2015 report titled 'Switching Off Gas' (available [here](#)). It examined each domestic gas market – electricity generation, residential, commercial and industry and developed a plausible scenario for gas demand.

Melbourne Energy Institute found that gas demand in eastern Australia peaked in 2012 and forecast that it could potentially halve by 2025¹ driven by economic fuel-switching and energy-efficient measures. The report found particular opportunity lies with homes in cooler climates (like parts of NSW, but especially Victoria) heating more efficiently.

Some of these opportunities are very straightforward, including:

“With respect to current space--heating practices in eastern Australia, MEI have identified that there may be between 500,000 and 1,000,000 homes (particularly in Victoria) where RCACs have already been installed, but the householder is not aware that using the RCAC in winter can be the cheapest way to heat their home (i.e. instead of using their gas heating). Were the householder to be informed of the possibility of savings, he/she might opt to switch off their gas heating, switch on their RCAC, and start saving money immediately.” (page 25)

The state of NSW may benefit from a “rebalancing “of gas supply and demand if homes in Victoria make economically rational changes and/or investments.

Gas Demand and Market Failures

It is often argued that gas is a “fuel of choice” and households are expressing non-economic preferences in connecting, or staying connected, to gas. However ATA is concerned that a significant proportion of gas demand could be the result of market failure. We have advocated for the need to quantify these market failures which include:

¹ Likewise an earlier Melbourne Energy Institute report from January 2015 called “The Dash From Gas” focused on NSW and found a plausible scenario where gas demand could halve.

- Renters - Cook-tops, hot water systems and possibly space heating appliances are provided by landlords. Renters are not making the decision about which appliances they will use. They cannot easily substitute these appliances.
- Low Economic Resource Households - Disadvantaged people do not necessarily have the financial ability to easily substitute electric appliances for gas ones even if, being to their financial advantage, it would be a rational choice. The additional capital outlay of about \$2000-\$2,600 is required to buy efficient electric appliances for cooking and hot water instead of gas appliances. This additional CAPEX allows households to access lower ongoing utility bills.
- Information Barriers - Initial purchase costs of different appliances are usually transparent. Information about running costs, maintenance costs and expected lifetimes is often difficult to find. Additional complexity is introduced when comparing across different fuel types.

Consumers need to be better informed of the real cost of purchasing and operating both gas and electric appliances in order that they can confidently make better decisions regarding those appliance choices that are in their long-term interest.

- New Residential Developments Connected to Gas – Hot water systems, cooktops and even space heating systems are a minor part of the purchase of a new home or unit. The developer/builder will be more motivated to keep the initial costs of purchase and installation low than lower ongoing bills. There is information asymmetry and “split incentives”. ATA research has shown that it is not economical to connect new homes to the gas network if efficient electric appliances are an option.

Summary

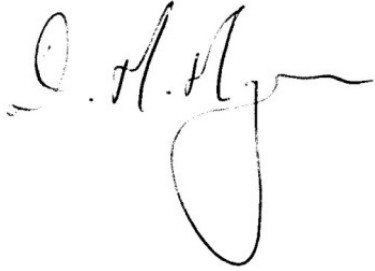
ATA research has found gas is no longer an economical choice for many NSW households in many situations. Our report outlined some policy implications of this finding and made recommendations. Many recommendations address possible market failures.

A subsequent survey of consumers has confirmed that a significant proportion of gas users is making plans to switch appliances away from gas, although relatively few have already done so.

ATA accepts that the existing network will require ongoing maintenance and from time to time replacement, but we argue that governments and energy institutions should expect a **contraction** of the gas network, which will be in the long-term interest of energy consumers.

Thank you for reading this letter and should you have any queries, please do not hesitate to contact us on 9639 1500.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'D. H. Moyse', with a large, stylized flourish extending downwards from the end of the name.

Damien Moyse

Policy & Research Manager

7th April 2016



Dear gas businesses,

Re: Residential Fuel Switching

We wish to draw your attention to the results of ATA's recent survey considering consumer trends in appliance choice.

ATA conducted a survey of small energy consumers in late 2015 regarding residential gas preferences, which gained nearly 1,000 respondents. A report has recently been released (link [here](#)).

Our survey demonstrates that residential consumer preferences regarding gas and electricity choices are changing, as indicated by the following:

- Most (62% of the nearly 1000 respondents) say they are either “much less likely” or “less likely” to choose a gas appliance now compared with 5 or 10 years ago.
- Among home-owners relying on gas for space heating (mains or LPG) who have investigated their options, 33% have a plan to replace their main appliance when it fails with something different (mostly efficient electric); compared with 7% who plan to replace it with like-for-like.
- 79% of those who replaced a hot water system in the previous 12 months replaced it with something different – often heat pumps. Only 34% of people who replaced their hot water system continue to rely mainly on gas (mains or LPG) for heating water; compared to 54% who didn't replace their hot water system.
- There is considerable enthusiasm for electric induction cooking. An induction cooktop would be the first choice of 44% of respondents (with only 31% having tried induction cooking).

A significant proportion of gas users are making plans to switch appliances away from gas, although relatively few have already done so.

Should you have any queries, please do not hesitate to contact Kate Leslie on 0402 083 353 or myself on 03 9639 5417.

Yours sincerely,

Damien Moyse
Policy & Research Manager

14th April 2016



Mr Sean Rooney
Executive Director, Sustainability and Climate Change

Environment and Planning Directorate
GPO Box 158
Canberra City ACT 2601

By email to: environment@act.gov.au

Dear Mr Rooney,

Re: Residential Fuel Switching

We wish to draw your attention to the results of ATA's recent survey considering consumer trends in appliance choice.

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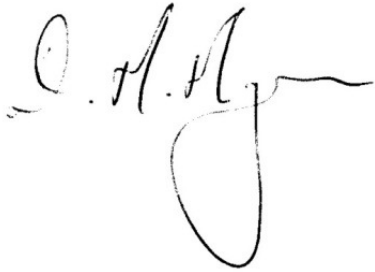
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Damien Moyse
Policy & Research Manager

14th April 2016

Mr Benn Barr
Deputy Director General – Energy Division

QLD Department of Energy and Water Supply
PO Box 15456, City East, QLD 4002



By email to: energyoddg@dews.qld.gov.au

Dear Mr Barr,

Re: Residential Fuel Switching

We wish to draw your attention to the results of ATA's recent survey considering consumer trends in appliance choice.

ATA conducted a survey of small energy consumers in late 2015 regarding residential gas preferences, which gained nearly 1,000 respondents. A report has recently been released (link [here](#), or <http://www.ata.org.au/news/consumers-moving-away-from-gas-ata-survey>).

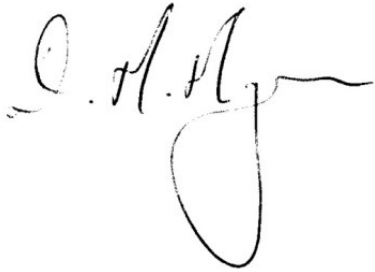
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Damien Moyse
Policy & Research Manager

14th April 2016



Mr Ben Ferguson
Director, State Energy Market Development

Vic Department of Economic Development, Jobs, Transport and Resources
GPO Box 4509, Melbourne VIC 3001

By email to: Benjamin.Ferguson@dssdbi.vic.gov.au

Dear Mr Ferguson,

Re: Residential Fuel Switching

We wish to draw your attention to the results of ATA's recent survey considering consumer trends in appliance choice.

ATA conducted a survey of small energy consumers in late 2015 regarding residential gas preferences, which gained nearly 1,000 respondents. A report has recently been released (link [here](#), or <http://www.ata.org.au/news/consumers-moving-away-from-gas-ata-survey>).

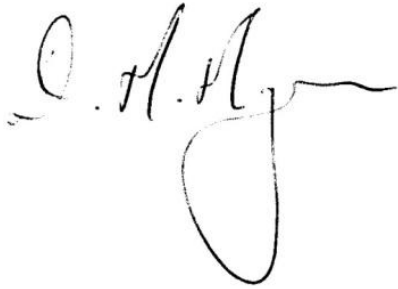
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Damien Moyse
Policy & Research Manager

14th April 2016



Mr Vince Duffy
Executive Director
Energy Markets and Programs Division
Department of State Development

Ms Rebecca Knights
Director – Energy Markets
Energy Markets and Programs Division
Department of State Development

By email to: Vince.Duffy@sa.gov.au and Rebecca.knights@sa.gov.au

Dear Mr Duffy and Ms Knights,

Re: Residential Fuel Switching

We wish to draw your attention to the results of ATA's recent survey considering consumer trends in appliance choice.

As mentioned in our letter to you of 8th February 2016 regarding provisional support of the Mt Barker expansion, ATA conducted a survey of small energy consumers in late 2015 regarding residential gas preferences, which gained nearly 1,000 respondents. The report has recently been released (link [here](#), or <http://www.ata.org.au/news/consumers-moving-away-from-gas-ata-survey>).

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Damien Moyse
Policy & Research Manager

18th April 2016



Ms Sue Morrison
Director of Energy Policy

Department of State Growth
GPO Box 536, Hobart, TAS 7001 Australia

By email to: sue.morrison@stategrowth.tas.gov.au

Dear Ms Morrison,

Re: Residential Fuel Switching

We wish to draw your attention to the results of ATA's recent survey considering consumer trends in appliance choice.

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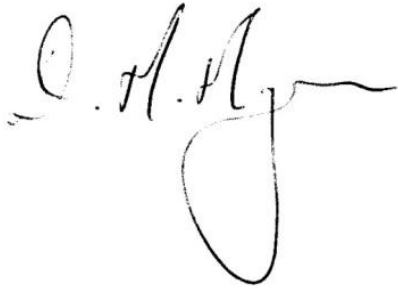
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