

10<sup>th</sup> August 2015



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GPO Box 3131  
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By email to: [ActewAGL2015GAAR@aer.gov.au](mailto:ActewAGL2015GAAR@aer.gov.au)

Dear Mr Anderson

### **Re: ActewAGL Access Arrangement Proposal**

Thank you for the opportunity to make this submission to the Australian Energy Regulator (AER) about the proposed Access Arrangement by ActewAGL.

### **About the ATA**

Founded 35 years ago, the ATA is a national, not-for-profit organisation with almost 6,000 members. Our members 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 support of Energy Consumers Australia is a strong and informed voice for energy consumers Australia-wide. We also speak with authority on behalf of the growing portion of the consumer base with an active interest in demand side participation in energy markets.

### **2014 ATA Research: “Are We Still Cooking With Gas”**

The ATA was commissioned by the Consumer Advocacy Panel in 2014 to conduct research on the impact of rising gas prices on residential consumers and to identify cost effective alternatives, where they may exist.

The research analysed the economics of new, high efficiency gas appliances as compared with equivalent new efficient electric appliances for space heating, water heating and cooking for households. By ‘efficient electric appliances’ we mean heat pumps for water heating, reverse cycle air conditioners for space heating, and induction cook tops and efficient electric ovens.

The analysis was conducted across each jurisdiction (including ACT) and differentiated by climate zones, household types and gas pricing zones, to understand potential costs and benefits.

This report stands as the authoritative body of work on the economics of fuel choice for homes in the NEM.

The major finding of the research was that mains gas is no longer the cheapest fuel source for some residential activities in many locations. In particular, the research found that:

- It is no longer economic for any new home, or existing all-electric home, located anywhere in the ACT (or indeed 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, we forecast that a new home in Canberra would save over \$12,000 (on a net present value basis) by choosing to go all electric with efficient electric appliances, compared to getting a gas connection for space heating, hot water and cooking (see below and AWSCWG p58). Any higher capex of the electric option is paid back in less than 5 years.

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

For the situation or example where a standard sized existing home already uses gas connection for space heating, if their gas furnace is within 5 years of the end of its life, they would save \$7,850 instead installing three reverse cycle air conditioners to provide the same service level. The payback is less than 5 years.

Our report has been well received. Individual gas distributors engaged with us in producing the report, and it has been extensively reviewed by the Energy Networks Association. On the basis of our research, one gas retailer and one academic institution commissioned us (separately) to build a forecasting model of gas demand.

The report has been utilised by the Australian Energy Markets Operator<sup>1</sup>, the Grattan Institute<sup>2</sup> and the Melbourne Energy Institute<sup>3</sup> in their own analyses; and the ATA has briefed governments in Victoria, ACT and NSW on its findings.

These findings are significant in the context of the continued reliance on gas by many households in the ACT.

## Research Context

The new Liquefied Natural Gas (LNG) export market from Eastern Australia is pushing up retail prices for domestic gas, a situation expected to worsen in coming years with substantial impacts on the affordability of gas for households.

At the same time, electrical technology to heat air and water is increasingly efficient. While gas remains cheaper for each unit of energy supplied at the meter, an efficient electric space or water heater now uses only 1/7 to 1/5 of the metered energy that the most efficient equivalent gas appliance.

As a result, efficient electric appliances for space and water heating have lower running costs than efficient gas appliances.

For cooking, electric induction cook tops are increasingly affordable, and provide similar amenity and higher safety than gas equivalents, such that they are preferred by many consumers.

1 <http://www.aemo.com.au/Electricity/Planning/Forecasting/National-Electricity-Forecasting-Report/~media/Files/Electricity/Planning/Reports/NEFR/2015/Emerging%20Technologies%20Information%20Paper.ashx> Accessed 08/07/2015

2 <http://grattan.edu.au/wp-content/uploads/2014/10/817-gas-at-the-crossroads.pdf> Accessed 08/07/2015

3 [http://www.energy.unimelb.edu.au/files/site1/docs/2323/The%20dash%20from%20gas.%20Could%20demand%20in%20New%20South%20Wales%20fall%20to%20half%3F\\_1.pdf](http://www.energy.unimelb.edu.au/files/site1/docs/2323/The%20dash%20from%20gas.%20Could%20demand%20in%20New%20South%20Wales%20fall%20to%20half%3F_1.pdf) Accessed 08/07/2015

These trends - higher retail gas prices and improved performance and price of efficient electrical technologies - are now firmly established within Australia. While the efficiency of electric space and water heating appliances is continuing to improve, that of gas appliances is forever limited.

### Economic Variables

The economics of gas versus electricity for households is sensitive to a wide range of interrelated factors, which include:

- whether or not an appliance is at or near the end of its asset life;
- whether the decision incurs the cost of a new connection or new fixed charges;
- whether the decision avoids the cost of existing fixed charges;
- current gas and electricity tariffs and tariff structures;
- forecast prices for electricity and gas;
- the annual input energy use of individual gas and/or electric appliances, which is itself influenced by:
  - building type, size and thermal performance;
  - the type and mix of existing appliances in the home;
  - climate zone (with particular reference to space and water heating loads and the performance of electric systems); and
  - consumer financial expectation, including the cost of capital and return on investment expectations for any individual consumer; and
  - consumer behaviour.

Please refer to our report<sup>4</sup> for the full details of the methodology.

### Economic Results – Canberra Gas Pricing Zone

ATA developed six 'Household Scenarios' that could be applied to each location modelled. The scenarios considered a range of housing types and sizes, with differing characteristics in terms of gas and electric appliance use and overall energy use.

The exception to this is the newly built home scenario (*Scenario 6: New Build*). As there are no existing appliances in place, a consumer is assumed to choose between installing either gas or electric appliances as the initial appliance investment.

The ATA also developed six 'Replacement Case' scenarios. For existing dual fuel homes, where an existing gas appliance has failed (or is highly likely to require replacement within five years), replacing it with one appliance avoids the capital expense of another in the near to medium term. Hence the up-front cost impact on the consumer will be the difference in capital cost between the two appliances.

Alternatively, the existing appliance may be still in good working order and unlikely to require replacement in the next five years. In this case, the decision does not lead to any avoided capital cost in the near to medium term and up-front cost to the consumer will be the full capital cost of the new appliance. If the appliance can be replaced with efficient electric the consumer may be able to avoid the need for an existing gas supply.

<sup>4</sup> <http://www.ata.org.au/ata-research/new-report-on-economics-of-gaselectric-appliances>

Economic results for each Household Scenario were defined as net present values (NPV) over a ten year period. Payback time was also indicated and defined as the time taken to return the additional capital invested into the efficient electric option as compared with the gas option. All cash flows were discounted at current mortgage rates. In reading the larger results table below, ATA's advice to consumers was as follows:

Cell Colour	Economic Result	ATA Advice
\$NPV	A positive NPV with a payback time of five years or less.	Definitely choose efficient electric over gas: any extra up-front cost will be recouped through savings within five years.
\$NPV	A positive NPV with a payback time of between six and ten years.	Consider choosing efficient electric over gas: any extra up-front cost will be recouped through savings within ten years.
-\$NPV	A negative NPV over 10 years.	Choosing electricity over gas is unlikely to save any money: any extra up-front cost will not be recouped within ten years.

The results table for the Canberra gas zone is contained below. Results are presented by appliance type (i.e. space heating, water heating, cooking) and replacement case for each Household Scenario:

Gas Zone: ActewAGL			Electricity Zone: ActewAGL			
Example Location: Canberra, 2600, ACT			Climate Zone: Heating dominated High Demand			
Household Scenario	Ref home	Small home	Large home	Public housing	LPG home	New build
<b>Switching a gas appliance, within 5 years of end of life, staying on gas network.</b>						
Space Heating	\$7,850	\$4,588	\$11,903	\$2,521	\$4,637	\$6,746
Hot Water	\$10	-\$935	\$1,320	-\$560	\$2,714	\$1,430
Cooking	-\$41	-\$56	-\$21	-\$41	n/a	-\$21
<b>Switching a gas appliance, not within 5 years of end of life, staying on gas network</b>						
Space Heating	\$5,050	\$2,388	\$8,503	-\$479	\$3,137	n/a
Hot Water	-\$1,490	-\$2,135	-\$480	-\$1,760	\$1,514	n/a
Cooking	-\$1,841	-\$1,856	-\$1,821	-\$1,841	n/a	n/a
<b>Switching one gas appliance, of any age, disconnecting from gas network</b>						
Space Heating	\$7,089	\$4,417	\$10,542	\$1,561	n/a	n/a
Hot Water	\$561	-\$114	\$1,578	\$291	n/a	n/a
Cooking	\$56	\$18	\$95	\$56	n/a	n/a
<b>Switching two gas appliances, at least one is within 5 years of end of life, disconnecting from gas network</b>						
Space Heating + Cooking	\$8,084	\$4,773	\$12,176	\$2,755	n/a	n/a
Hot Water+ Cooking	\$255	-\$758	\$1,611	-\$315	n/a	n/a
<b>New &amp; existing homes, not currently gas connected, choosing efficient electric instead of gas*</b>						
All Heating & Cooking	\$12,270	\$7,577	\$18,111	\$6,372	\$10,307	\$12,650
<b>All gas appliances switched: one is within 5 years of end of asset life, avoiding \$2,000 replacement capex.</b>						
All Heating & Cooking	\$5,769	\$2,426	\$10,260	-\$29	\$7,357	\$4,613

\* Assumes full CAPEX on both electric and gas sides.

The sensitivity of ATA's results was tested for gas and electricity price assumptions, off-peak electricity tariffs and gas appliance need.

### **Sensitivity of Results: Future Price Trajectories**

Sensitivity analysis was undertaken to test the results against a range of forecast retail gas prices for Victoria and NSW. ATA adopted low and high ranges for the purposes of comparison against the 'medium' price trajectories (in the table above). This analysis was carried out in order to understand the underlying strength of economic results.

Although sensitivity was not done on ACT results specifically, overall ATA found that economic results were not particularly sensitive to different retail gas price trajectories – i.e. whilst they changed the magnitude of the numbers; they largely did not change an uneconomic investment into an economic one (or vice versa).

As such, the analysis demonstrated that rising wholesale gas prices does not have a strong bearing on the economics of gas and electricity fuel switching. Rather it is the emergence of more cost effective efficient electric alternatives in the past 10 years that is driving the economic opportunity.

### **Sensitivity of Results: Off-Peak Electricity Tariffs**

Some consumers may be able to access off-peak rates for electric resistance water heaters or indeed heat pump hot water systems. Some households (such as those in apartments) may not be able to install more efficient heat pump hot water systems due to their size and spatial requirements.

Where an economic case for switching away from gas hot water exists, a lower off-peak electricity rate makes this case even more compelling.

In gas zones where efficient electric hot water systems were largely found to be uneconomic (without subsequent gas disconnection), the ability to use off-peak rates changed this finding considerably (i.e. to a positive NPV).

### **Sensitivity Analysis: Gas Appliance Replacement Need**

Finally, ATA also tested the sensitivity of the results on the number of gas appliances approaching the end of their asset life.

The last Replacement Case in the table above assumes that only one existing gas appliance is within five years of the end of its asset life; and yet all three gas appliances are switched to efficient electric. As such, only one gas appliance capex (assumed to be about \$2,000) is avoided by the switch to electric.

If an ACT household is in the situation of having a second gas appliance also within five years of the end of its asset life, it can reasonably be assumed that an additional \$2,000 of gas appliance capex will be avoided by the switch to electric.

In this circumstance, a total avoided gas capex of \$4,000 makes an otherwise borderline economic decision for small and medium homes and public housing to switch to efficient electric highly economic; and almost makes the choice economic for a larger home.

## Long Term Interest of Consumers

The question of fuel choice and potential fuel switching raises an important question about the boundaries of network regulation: Where does the National Gas Objective (NGO) start and the National Electricity Objective (NEO) end?

Clearly, the NGO applies to the regulation of gas networks and therefore to current and future gas consumers. And more or less all energy consumers are electricity consumers, so the NEO applies to them.

But what about a consumer facing a decision of choosing between these fuels? For a consumer who connects to gas because it is the most cost effective option over the longer term, the NGO has arguably been achieved. However as indicated by the ATA research, this is now the minority of new connections anticipated by gas businesses.

For the consumer who prefers gas for non-price related reasons and is happy to pay a premium for it, that is consistent with the NGO too.

However, let's look at three cases that might challenge the boundaries of the NEO and the NGO:

1. If some consumers make a decision not to connect to gas, because it isn't cost effective for them, we would argue that decision is in keeping with their long term interest with respect to prices, and so is in keeping with both the NEO and the NGO.
2. Likewise, a consumer who uses gas today, and replaces that appliance with an electric one because it is more cost effective, also is in keeping with both objectives.
3. On the other hand, consumers in either of those categories making the wrong decision would be a failure under both objectives.

We have inherited a false distinction in the separation of the NGO and NEO, whereas the real issue to the consumer is the cost effectiveness of energy, irrespective of the specific fuel type. In ATA's view, in the absence of an overarching single objective, energy market institutions should have regard to both fuels in the context of each objective, and we ask the AER to do so in this case.

## ActewAGL's Proposal

Even though volumes of gas are declining (p20), ActewAGL proposes a higher capex program and higher opex to service a growing customer base (p37). Despite significantly less financing costs (p37) and less capex and opex than allowed in the previous period (p20), it is looking for a real 1% increase in allowed revenue (p7).

In terms of the tariff path, a small initial price reduction (CPI – 2.23%) is followed by CPI increases (p7). Further it proposes to introduce different tariff classes, structures and review mechanisms to encourage more gas consumption (p40).

ATA's views on the ActewAGL proposal are presented below.

## New Connections to Gas Network

Perhaps understandably, ActewAGL appears reluctant to acknowledge a problem: declining demand for reticulated gas – with existing households becoming more efficient gas users (on average) and new connections using significantly less gas.

Households and businesses are still connecting to the gas network for now, but they are failing to make up the difference. Peak demand for gas from both residential and businesses occurred in 2013 (Core Appendix 3.02).

Despite these observed trends, increasing customer numbers are used to justify increasing capex. Proposed capex<sup>5</sup> increases by somewhere between 6% (p37) and 11% (p59) compared with the previous Access Arrangement period.

The ATA is particularly concerned by the rate of new connections assumed. Because increasing ‘volume’ (residential and business) customers is a historical fact, the demand forecasts prepared by Core are primarily derived from the rate of new home developments. However the future take-up of gas is merely treated as an assumption – a flat and unvarying 90% of new homes - that is not substantiated in any level of detail in the proposal. Nor is a varying penetration rate considered as a scenario.

The ATA research unequivocally found that new connections to the gas network are uneconomic in the ACT.

*“New consumers connecting to gas will not be served with the most cost effective energy supply and existing consumers will experience higher bills as they subsidise new connections. As noted above, once the new assets are built, the cost to finance and maintain them is recovered from all consumers.”*  
AWSCWG p34

Core has forecast over 22,000 new connections to 2021<sup>6</sup>, in attempting to justify significant capex increases.

**ATA’s research seriously calls into question this level of forecast connections and we suggest that the AER undertake further analysis into the size of the ‘economically viable’ gas market to substitute this with a more credible number.**

ActewAGL reports that its own customers are similarly challenging growth of the gas networks:

*“It is important that current customers do not subsidise new customers, or that existing customers are not burdened with the cost of paying for long-term infrastructure that is for the benefit of future customers.”*  
(ActewAGL, ‘Attachment 1: Consumer Engagement’ p19)

*“Keen to ensure the long-term viability of ActewAGL and don’t want to see us invest in infrastructure that may be obsolete in the long-term future. Questioned if the growth of the gas network, by increasing the number of customers, the right long-term strategy?”* (ActewAGL, ‘Attachment 1: Consumer Engagement’ p19)

<sup>5</sup> We note that AER did not approve a CAPEX budget for 2015/16 (p23). Coincidentally or not, what is proposed is higher than previous years for a number of reasons. The base for CAPEX budget is compared to this inflated base 2010-2016.

<sup>6</sup> Core Energy acknowledges the findings of AWSCWG for space heating, but not new connections being uneconomic (Core Energy, Gas Demand Forecasts, p95).



ATA accepts that the existing network will require ongoing maintenance and from time to time replacement, but we believe the objective of this and future Access Arrangement in the long-term interest of gas consumers should acknowledge the inevitable **contraction** of the gas network.

### Demand Forecasting Incentives

It is worthwhile considering the incentives gas businesses face in forecasting demand.

The AER currently sets gas distribution Access Arrangements taking into account forecasts of average demand and new connections. Once total revenue and the number of connections forecast are set, average prices are then calculated. If the forecasts for average demand are not met, the capped revenue will not be achieved by the business.

With price cap, rather than revenue cap, regulation, structurally the gas distributors have an interest to err on over-forecasting new connections, specifically because new connections can justify new capex.

The ATA draws an analogy with the incentives facing electricity businesses regulated by price caps in previous years. Rising peak demand justified expanding their asset base, however as customers responded to rising prices, electricity consumption patterns changed. Peak demand started to decline, as did average demand.

Likewise, gas businesses regulated by revenue cap face an incentive to assume the continuation of existing trends of connections and ignore the changes in consumer behaviour that suggest otherwise, in an attempt to justify capex to expand the network, expand their RAB and maximise revenue. It's not merely an absence of good information, but strong incentive to assume the continuation of existing trends.

**ATA believes that, like in electricity, average gas demand and the number of new connections are not independent variables, but have a relationship.** It appears illogical to expect consumers to connect to the gas network at rates seen in the past.

### Forecasting Fuel Switching

When it comes to the competitive position of a gas and electricity, close substitutes, an economic concept called "cross price elasticity" is used. The ATA agrees with Core that "the preferred approach would involve an observation of actual demand response to actual price movements over a statistically relevant period" (Core Energy, Gas Demand Forecasts, p83).

However price divergence between gas and electricity from historical trends is only expected in the next Access Arrangement period. ATA is highly suspicious about relying on cross price elasticity estimates. Core claim they reviewed the alternatives with ActewAGL (Core Energy, Gas Demand Forecasts, p83).

**ATA would prefer the gas businesses or their consultants be required to analyse the competitive position of gas against electricity.** In this context, ATA's research appears to remain the only comprehensive and up-to-date body of work that has assessed competitive positioning in the ActewAGL areas.

There are many factors to consider with fuel switching, including gas and electricity tariff trajectories, appliance efficiencies and consumer price sensitivity to energy prices. How that price sensitivity manifests can be user behaviour (e.g. better draught proofing, double glazing windows, heating less of the house, accepting less comfort), or purchasing more efficient appliances (whether gas or electric).



The uptake of efficient electric technology is an important and complex variable that undoubtedly relates to the economics to the householder. That is, when the economics is more favourable for switching, a greater number of eligible households switch. Eligibility depends on one of a number of triggers – the principal ones being whether an existing gas appliance has reached the end of its life or the home is being renovated.

Fuel switching forecasts should take into account these factors in addition to competing technologies long run market share and measuring take-up trends.

ATA considers that declining demand for gas because of a more efficient competitor (electricity) should be considered a business risk inherently accepted by the owners of gas distributors and its bond holders.

### Core's Gas Demand Forecasts

In the context of discussing forecasts of new Electricity to Gas connections, Core assumed a marketing budget at the same level as current Access Arrangements (Core Energy, Gas Demand Forecasts, p21). The marketing budget is not transparent in ActewAGL's submission.

In the context of it being uneconomic to connect to gas for households, ATA believes it is inappropriate any pass through to consumers for the cost of marketing or activities to promote the gas network – this marketing is a commercial decision and should be funded accordingly.

ATA is also concerned about Core's methodology of forecasting demand growth in Queanbeyan and Palerang, applying the same mix of medium and high density housing as applied to Canberra. ATA questions whether this is a realistic assumption.

### Additional Matters

ATA has a number of other reservations and queries about ActewAGL's proposal.

Firstly, ActewAGL are proposing new tariff classes and tariffs and a new reference tariff variation mechanism (weighted average price cap) (p40). It claims "the new tariff structure will allow ActewAGL Distribution to promote the efficient use and **growth** of the network" (p34). As discussed above, ATA challenges any statement that continued growth of the gas network is in the long-term interests of consumers.

Also, tariff shapes that encourage more use tend to penalise low gas users. In ATA's view, the single most urgent need is to mitigate the impacts of gas price rises on vulnerable and disadvantaged consumers. ATA is concerned that changed tariff shapes will impact vulnerable and disadvantaged consumers.

*"Safety and reliability are valued, but consumers were worried about the affordability of gas."* (ActewAGL, 'Attachment 1: Consumer Engagement' P19)

ATA is concerned that networks may frame the proposal inappropriately as a safety initiative, which is concerning given that safety is an emotive issue that may be exploited to provoke a particular response.

**The AER should scrutinise any capex safety proposals for evidence of informed understanding by consumers about level of risk or consideration of trade-offs.**

Regarding opex, in the previous Access Arrangement period, ActewAGL's controllable opex was less than AER allowed opex (p20). The proposed opex budget in this Access Arrangement is 11% **higher** in real terms (p37). Given an opex efficiency sharing mechanism exists (p70), the ATA expects the AER to scrutinise opex budgets carefully.

We are also concerned by the Utilities Network Facilities Tax (p25) in the previous Access Arrangement period. ATA recommends the AER should adjust revenue and/or Weighted Average Cost of Capital accordingly, taking into account any impact this tax may on the returns to the ACT government as a shareholder in ActewAGL.

Finally, in addition to excessive claims for capex underpinned by unjustified assumptions about new connections, there is the issue of Weighted Average Cost of Capital (WACC). ActewAGL is proposing an overall WACC allowance of 7.15% (p37). This compares unfavourably (for consumers) to the AER's recent WACC determination of 5.45% for SA Power Networks (ActewAGL's proposed returns on equity and debt are both higher).

**ATA expects the AER's determinations to be consistent with its recent decisions and provide for a lower WACC.**

We note ActewAGL "would not accept" the determination of a lower WACC (p63) and "reserves its rights... to amend the depreciation schedule should the methodology to estimate the rate of return be changed by the AER" (p64).

The ATA believes that businesses should have always made past investments with an understanding of all the risks (e.g. carbon constraints). Accelerated depreciation allowances merely act to guarantee returns for today's investors. Consumers would welcome businesses choosing to accelerate depreciation. And given the risk to their assets, it would seem the logical thing to do. However we strongly oppose the idea that networks would pass the costs of accelerated depreciation through to consumers.

ATA members are concerned that long-term recovery of network capex in the context of a "death spiral" is being characterised by the businesses as an intergenerational issue for consumers, rather than an investment issue for businesses. In this context, businesses have raised questions about whether today's consumer advocates represent tomorrow's energy consumers. We find the suggestion that consumer advocates don't represent future consumers to be quite offensive and we ask the AER to challenge any energy network businesses that make such assertions.

Thank you for the opportunity to submit to this process and should you have any queries, please do not hesitate to contact either Craig Memery on 0412 223 203 or [craig@ata.org.au](mailto:craig@ata.org.au) or myself on 03 9639 1500.

Yours sincerely



**Damien Moyse**  
*Policy & Research Manager*