

GINNINDERRY MICROGRID

**“NO GAS NETWORK” OPTION
CONSUMER WORKSHOP REPORT**

OUR REF: #3123

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Executive Summary

The primary question for this work was whether building a suburb that did not have gas network infrastructure present would be too big a barrier to enough potential buyers to justify the risk. This situation could occur if a) there was a substantial proportion of people who were instinctively put off considering a suburb with no gas; and b) their opinions were not able to sway.

The two stages of the research showed:

1. There is indeed a substantial proportion of the ACT population who do have a preference for using gas for at least one of the three main household purposes (75%).
2. About 1-in-3 Canberrans would probably not instinctively consider buying in a suburb they liked if it didn't have a gas network option – and this figure increases amongst people with stronger gas preferences.
3. However, the workshop phase showed that with the provision of effective information and demonstrations of electric technologies many people can be swayed to a more open and positive view of electric technologies and a no-gas suburb.

It is not possible from this research alone to determine how durable this effect is. That is, while their opinions became more open to the electric options during the workshop, we can't tell from this whether the change was permanent or long-lasting, or would wear off soon after leaving the session.

However, as a 'proof-of-concept' test to see whether those segments with a gas preferences were irretrievably excluded from our pool of potential buyers into a gas network-free Ginninderry, the experiment seems to show that they are not. While it is clear that not every single person with a gas preference came around to the idea in the workshop, many did become much more open to it.

Of course, the question is how to expose people who are not predisposed to the idea to the compelling information? It is clear that many people's instinct will be to not consider a gas network-free suburb – and so they are unlikely to come seeking information about it. A proactive communications strategy will be needed to make people aware that we understand their concerns, and that there are good answers available. It will require a push strategy, as these important segments will not come to us seeking the information we have.

It was hypothesised going into the research that cooking may be the biggest barrier to electricity. However, neither the survey nor the workshop really supported this – with preferences for and experience of gas for hot water and (in particular) household heating just as strong.

The cooking demonstration was very effective in dismantling most barriers towards electric cooking, and this should be actively harnessed to eliminate this barrier. However, if anything, the topic of household heating emerged from the workshop discussions and observations as potentially the most critical consideration. The effectiveness of heat pumps was not really questioned (there was some minor discussion about whether gas heat was somehow more long-lasting), but the question of the noise associated with heat pumps in residential areas was certainly raised as a potential barrier. This will need to be proactively addressed.

It seemed that it was the environmental and economic arguments for no gas infrastructure that were the most compelling. While the social / personal / community benefits did have some value, it was much lower than for the other two arguments. When communicating the reasons for a no-gas decision (should that be the final direction taken), it would be sensible to lead the explanation with the environmental and economic rationale, and to present these individual and community benefits as a 'bonus'.

As with most scenarios, there is no one, single 'silver bullet' solution to all people. If the decision is made to exclude a gas network from Ginninderry, then it will be a combination of strategies that will maximise the chance of any one individual person being open to (or attracted to) the idea.

- Some people, especially those without a gas preference, will see no barrier and may in fact see the absence of gas as an attractor.
- Those who do have a mild-to-moderate barrier to the absence of gas may be instinctively disposed to look elsewhere – but it appears if they can be exposed to information and practical demonstrations of the viability of electric options, then many will be swayed to add Ginninderry to their consideration set. Working out how to get that information in front of them will be the communications challenge, but if it can be done, it should be effective.
- For those who do retain a strong preference for using gas, then making it easy and practical to utilise a gas bottle option will likely have some contributory role to play.

Recommendations

There are several specific recommendations that emerge from this research process:

- i. An induction cooking demonstration can clearly be very powerful, and establishing a venue where people can see such a demonstration will be an effective tool. It is visual, practical, interesting and powerful lead message.
- ii. The issue of heat pump noise needs to be investigated, resolved, and proactively communicated. Demonstrations will be needed, not just information. Display homes may offer one venue for this.
- iii. The people who need to be convinced to consider a gas network-free Ginninderry against their instinctive reaction will need to be proactively communicated with. The information and demonstrations is able to sway them – but only if they can be attracted to engage with it in the first place. They will not tend to seek it out.
- iv. Gas bottle options are not without some value, and facilitating this being viable and easy would be sensible.
- v. It would be advantageous to understand something about the 'durability' or permanence of attitude change that occurs. The information and demonstrations of the workshops clearly had a short term impact on openness, but it would be useful to understand more about how long-lasting (if at all) this effect is.

Part 1: ACT Survey

The question of whether or not to commit to the additional costs of installing gas network infrastructure in the new Ginninderry development rests, in part, on the potential size of the market which might be lost by adopting this approach. If there are substantial proportions of the community who have a strong preference for gas and / or who would not consider living in a suburb that did not have a gas option, then there may be a significant risk associated with this strategy.

The first part of this research was to conduct an indicative survey of the ACT community, and establish the magnitude of these views. There are three primary uses of gas in Canberra households (cooking, heating, and hot water), and the survey considered each of these.

A total of 301 short telephone surveys were conducted, in conjunction with recruiting participants for a subsequent workshop stage (see Part 2). The raw sample was weighted by age and gender to match proportions in the ACT population.

Characteristics of the sample

- 90% of respondents owned their home, with 9% who paid rent or board (and 1% who had some other type of arrangements). This is a relatively low proportion of renters compared to the ACT population, and this should be borne in mind when interpreting these results.

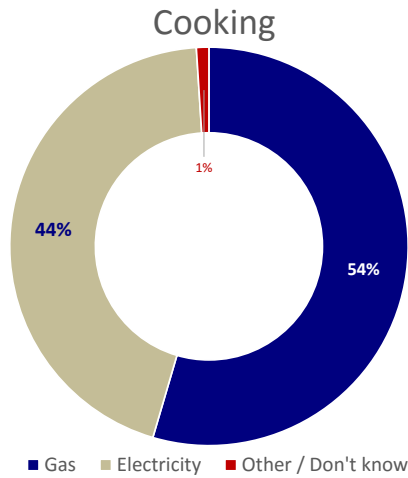
- They were distributed across Canberra:

○ Belconnen	27%
○ Tuggeranong	27%
○ Woden / Weston Creek	14%
○ Inner North	11%
○ Inner South	11%
○ Gungahlin	10%

- A total of 26% considered themselves *likely* (10%) or *possibly* (16%) in the market to buy a house in Canberra in the next 5 years.

Current Energy Sources

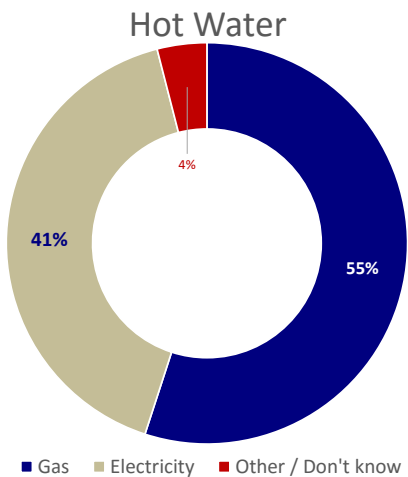
In total, 83% of the ACT population use gas for at least one major household purpose.



Slightly over half of the ACT population currently use gas to cook.

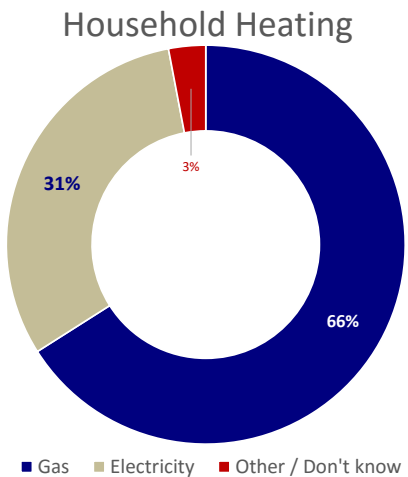
Use of gas was at 60% for those who were likely or possibly in the market to buy in the next five years.

Use of gas was more commonly reported by respondents from Gungahlin and the Inner South – with around two thirds of the respondents from these areas using gas to cook.



The proportion who used gas for hot water was very similar to cooking, at a little over a half of all respondents.

Use for gas hot water was reported more commonly in Gungahlin, Woden / Weston Creek and Tuggeranong.



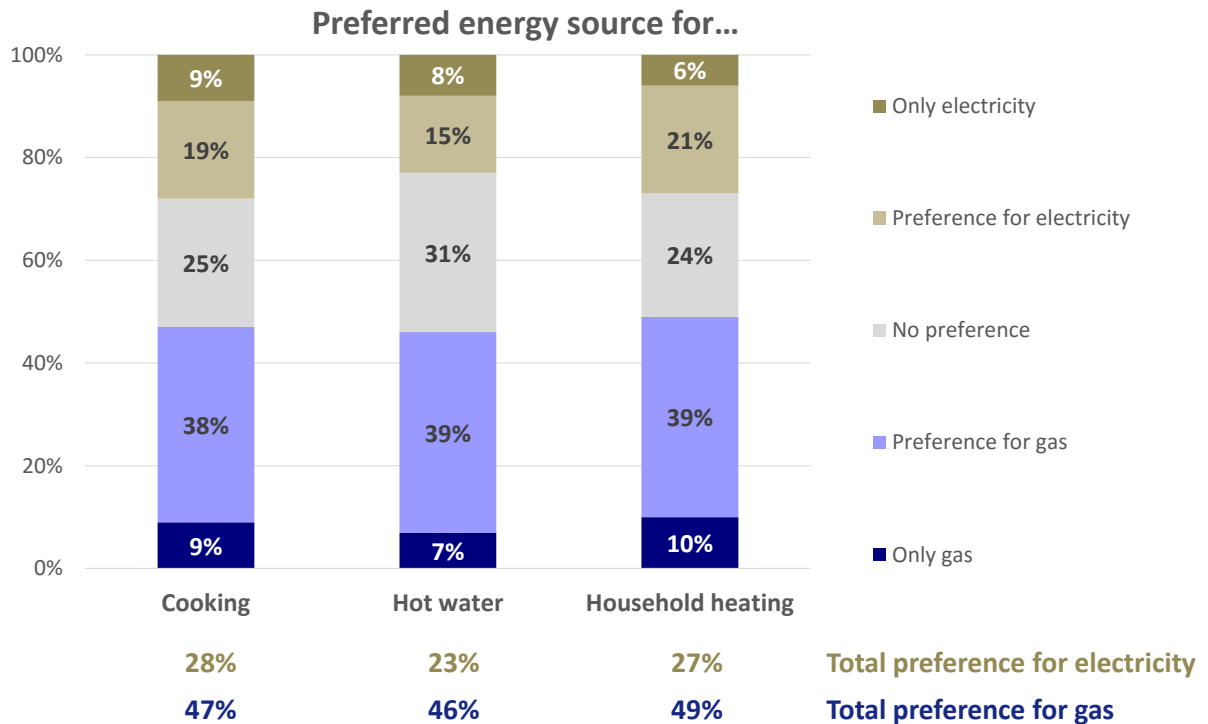
Household heating was where there was the strongest use of gas. Two thirds of respondents reported using gas, compared to just 31% using electricity.

There was little variation across areas, with 62% - 73% of respondents from each area saying they use gas.

Preferred Energy Sources

Around half of Canberrans have a preference for gas for each of the three types of uses being considered, but there is little variation between the three uses.

Around a quarter (23% - 28%) had a preference for electricity for each use; while a similar proportion (24% - 31%) had no strong preference either way.



Base: All respondents [n=301]

Three-quarters of respondents had a preference for using gas for *at least one* of the three uses, but only 18% had a preference for gas for *all three uses*.

18% indicated that they *would only use gas* for at least one of the three.

Older people were a little more likely to say they would *only* consider gas for at least one use (24% of those aged 50+ compared to 14% of those aged under 50), but there were no differences in terms of total preferences.

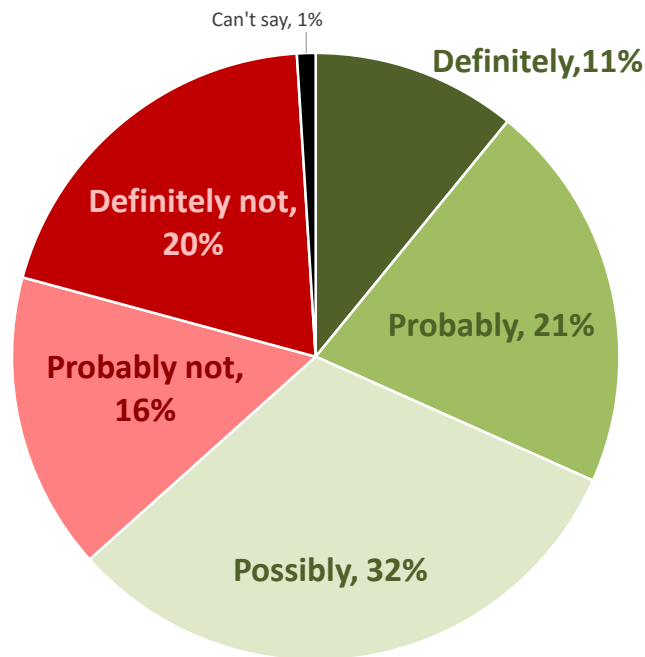
Consideration of a Suburb with No Gas

Perhaps not surprisingly given the relatively high proportion of people who have an underlying preference for gas, the concept of a suburb without gas is not an automatically attractive option.

Only 32% said they would *definitely* or *probably* consider buying a house in a suburb they liked that didn't have gas connections. This increased to 64% when including those who said they would *possibly* consider it – which might be thought of as the best indication of the real-world default willingness level.

36% said they would probably not or definitely not consider a house in a suburb they like but without gas connections.

SURVEY: Would you consider buying a house in a suburb you like that only had electricity connections, but not gas?



Base: All respondents [n=301]

As would be expected, people who have a preference for using gas are much less likely to think they would consider a gas network-free suburb.

Have a preference for using gas for...					
Consider a gas network-free suburb? ↓	3 uses	2 uses	1 use	No uses	Total
Definitely:	2%	7%	7%	25%	11%
Probably:	8%	20%	24%	29%	21%
Possibly:	35%	31%	32%	32%	32%
Probably not:	22%	16%	18%	9%	16%
Definitely not:	33%	26%	19%	5%	20%
At least possibly	45%	58%	63%	86%	64%
Probably + Definitely not	55%	42%	37%	14%	36%
<i>% of population</i>	<i>18%</i>	<i>25%</i>	<i>32%</i>	<i>25%</i>	<i>100%</i>

The group who said they would *only* want to use gas is much smaller – but the same pattern is evident. Amongst the 5% of the population who said they would only want to use gas for 2 or more of the three uses, 0% said they would *definitely or probably* consider buying in a gas network-free suburb.

This shows the importance of seeing whether or not those with a gas preference can be persuaded to consider a suburb without gas connections – which is the purpose of the workshops described in Part 2 of this report.

Bottled Gas Option

Bottled gas is a potentially useful option to have available, though it is far from a ‘silver bullet’.

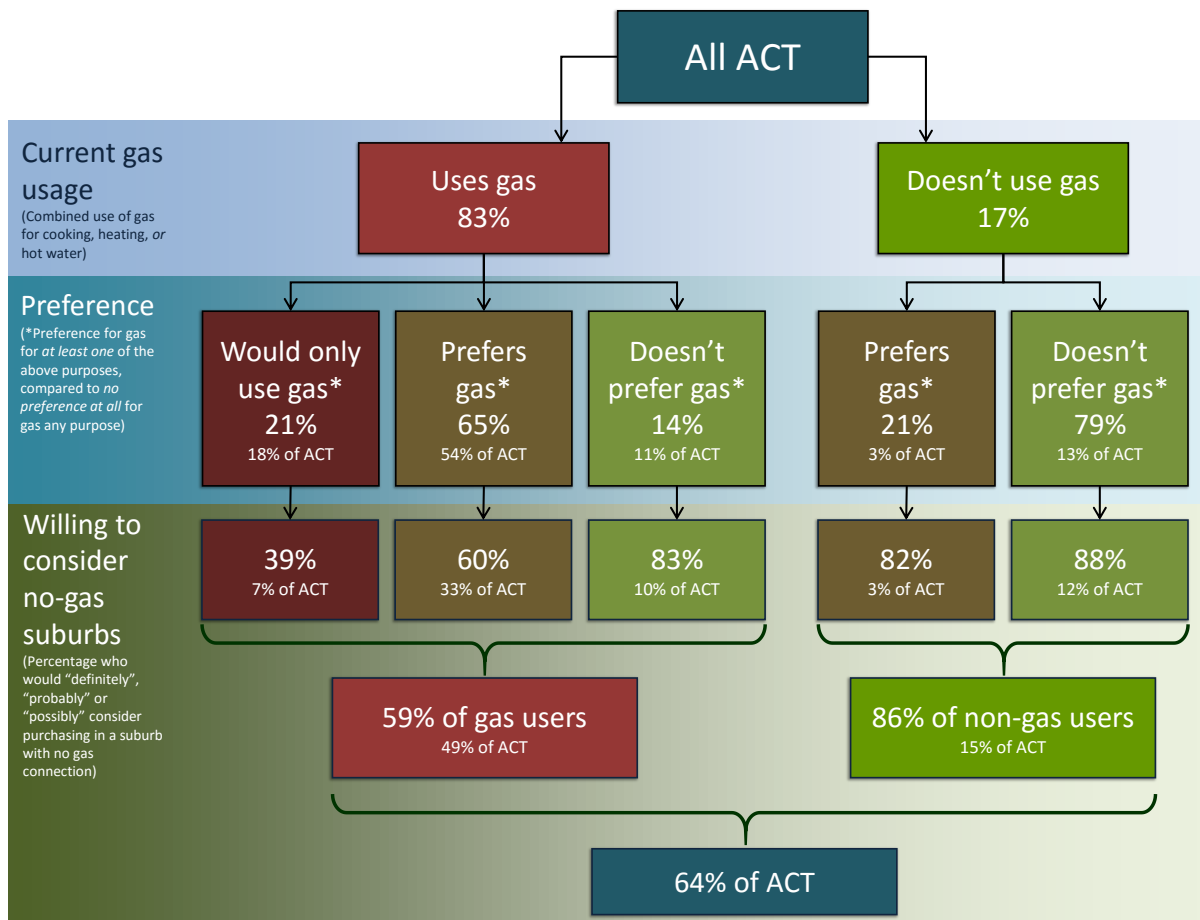
64% of respondents said that they would *at best possibly* consider buying in a suburb without gas. This group was asked “*if it was easy to install and maintain a bottled gas system, would that change your mind about living in a house without the gas network?*”

Of this group, only 19% (12% of all respondents) said that an easy gas bottle option would make them *definitely or probably* change their mind about living in a house not connected to a gas network. Another 30% said it would *possibly* change their mind.

The group who said they would *definitely not* consider a gas network-free suburb (20% of the population) were naturally the least likely to say that bottled gas would change their mind, though even of this group a third said they it would *definitely, probably or possibly* change their mind

Summary

The flowchart below shows the interaction of all these measures of use, preference and consideration of a gas network-free suburb. It shows that the 64% of all people who would *at least possibly* consider a suburb without gas is made up of a large proportion of people who are in fact gas users but whose preference to gas varies; and a smaller group of non-gas users with a much higher level of individual willingness to consider such a suburb.



The 10% of people who described themselves as *likely* (*Definitely + probably*) to buy in Canberra in the five years were slightly less likely to say they would consider a gas network-free suburb (53%).

However, the 16% who felt they would *possibly* buy in the next five years were actually slightly *more* likely to say they would consider a gas network-free suburb (79%).

Part 2: The Workshops

Two 90-minute interactive workshop sessions were held at the *Foodish* cooking school in Belconnen on Tuesday 20 September. A total of 51 participants attended across the two sessions. The purpose of the workshops was very overtly to see whether those people who had a predisposition towards use of gas would be moveable in their opinions if provided relevant information about electric options.

The workshops included an introduction to the concept of a suburb with no gas network infrastructure, and information about electric options for the main potential uses of gas (including a 30-minute demonstration of induction cooking).

Participants completed a ‘continuous’ survey with six parts:

1. Pre-existing views on preferred energy sources
2. Reaction to the idea of a suburb without a gas network connection
3. Household heating and cooling
4. Hot water
5. Cooking
6. Final opinions and any impact

The Participants

Participants were recruited to the workshops via the telephone survey, and via the participants from the previous West Belconnen Microgrid community workshop conducted in June. Those who came from the survey were limited to people with a preference for gas on at least one of the three main uses being considered – while the participants from the earlier workshop could have a preference in either direction.

11 of the participants indicated that they had been at the first workshop (but 18 did not answer this question at all).

There was a reasonable demographic spread of participants:

- 44% were male and 56% were female.
- 14% were Gen Y, 20% were Gen X, 42% were Boomers aged 50-64, and 24% were older.

84% of participants owned their home, with 16% who either rented or who had some other arrangement.

Initial Dispositions

Current energy sources

The currently used sources of household energy for participants broadly matched the general patterns for Canberrans' seen in the survey. Gas was the more commonly used energy source for hot water and for heating, while there was a closer balance seen for cooking.

Currently used sources of energy:	Gas	Electricity	Something else	Combination	Don't Know
For cooking	39%	33%	-	27%	-
For hot water	55%	29%	8%	6%	2%
For household heating	55%	25%	4%	16%	-

Preferred energy sources

Compared to the general community, participants were more likely to have a preference for using gas to cook (two thirds, compared to 47% of the community). However, they were more likely to say they had no strong preference for either gas or electricity for their hot water or household heating needs.

Preferred sources of energy:	I would only use gas	I prefer gas	No strong preference	I prefer electricity	I would only use electricity
For cooking	10%	56%	20%	10%	4%
For hot water	2%	28%	47%	15%	9%
For household heating	6%	24%	45%	18%	6%

In total, three-quarters of the participants had at least one preference for gas – exactly the same proportion seen in the phone survey.

The table below shows a quick summary of the key attributes that make people prefer one type of energy. *Note: These are based on just small numbers of participants in some cases, and the first listed reasons are the more commonly mentioned ones.*

	Cooking	Hot Water	Household Heating
Prefer gas because...	Control Effectiveness Easy / simple Efficiency	Effectiveness Efficiency	Effectiveness Cost Ease / convenient Efficiency
Prefer electricity because...	Safe Easy / simple Efficiency	Easy / simple	Ease / convenience
Those with no preference		Cost	Cost

Openness to alternatives

As well as actual preferences, we were interested in how familiar or opposed participants with a preference for gas were to electricity and using electric appliances. While many of the people in the workshop might have had a preference for gas, there were few who were totally negative about electricity.

There were 32 who had a preference for using gas to cook with. Two-thirds of these said they had had experience cooking with electricity within the last year (though it is likely a substantial proportion of these people were referring to ovens rather than cooktops). Only 6 of the 32 thought that electricity would be *unsatisfactory* to cook with.

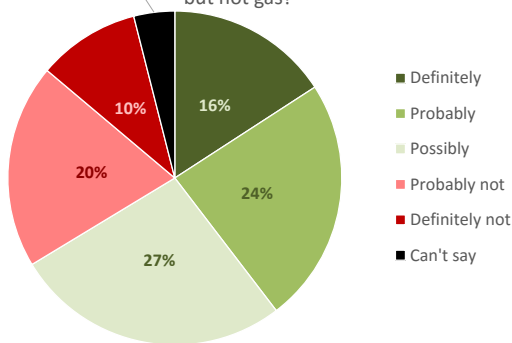
There were smaller groups of participants who had a preference for gas for hot water (14) and heating (15). Half of those with a preference for gas hot water had very recent experience with electricity, and only 3/14 thought electricity would be *unsatisfactory*. However, two-thirds with a preference for gas heating had not had experience of electric heating in the last 10 years – though it was only 4/15 who thought it would be *unsatisfactory*.

[A similar general pattern was seen amongst those with a preference for electricity – just in reverse.]

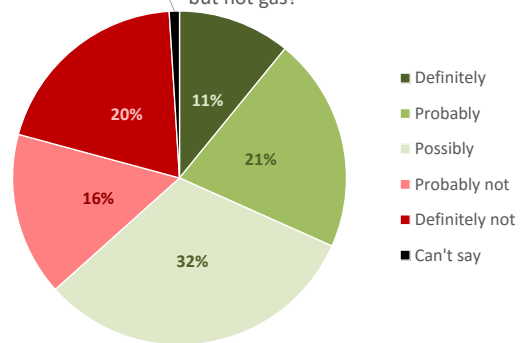
Consideration of a non-gas suburb

Participants in the workshop showed a similar disposition to the general community in terms of initial consideration of buying a house in a suburb not connected to gas. If anything, they were a little more open to the idea, but broadly the patterns were about the same.

WORKSHOP: Would you consider buying a house in a suburb you like that only had electricity connections, but not gas?



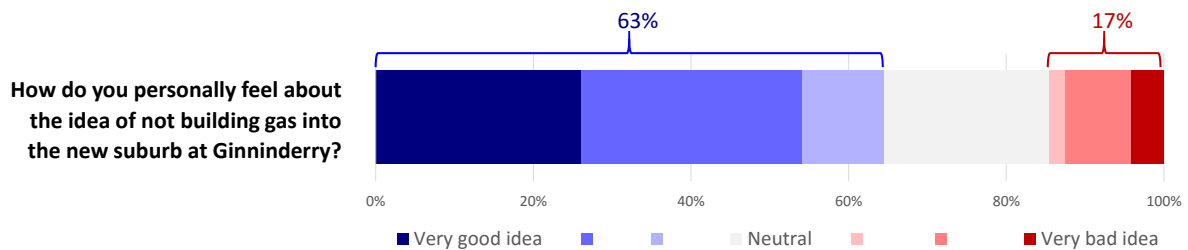
SURVEY: Would you consider buying a house in a suburb you like that only had electricity connections, but not gas?



When splitting out the participants by those with and without a preference for gas, the same general pattern seen in the survey was again observed. Of the 13 participants with no gas preferences, 10 of them would *definitely or probably* consider a no-gas suburb (77%). However, just 10 of 38 with a gas preference would consider a gas network-free suburb (26%).

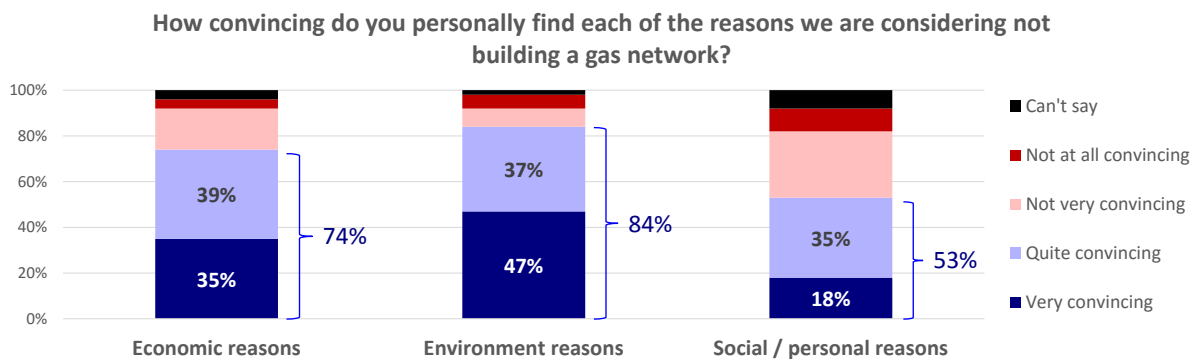
The Ginninderry “No Gas Network” proposition

When initially presented with the idea of not building gas into the new Ginninderry suburb, workshop participants were generally positive about the idea. Two thirds (32 out of 51, 63%) considered it a good idea. Just 7 (17%) felt it was a bad idea.



Continuing the general and expected pattern, those with any preferences for gas were less likely to think a no gas suburb was a good idea. About half of the participants with any gas preferences thought a no gas suburb was a good idea, compared to almost all (12 of the 13) who had no preferences for gas.

The environmental reasons for having no gas were the ones which were most persuasive to participants, with 84% feeling that they were at least quite convincing. Three-quarters accepted the economic reasons, but only half felt the social or personal reasons were convincing.



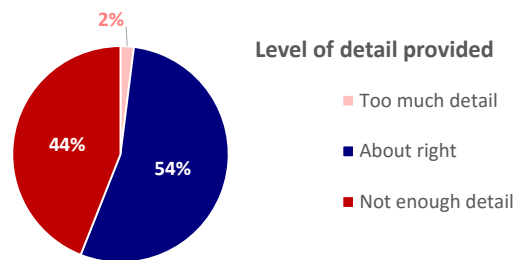
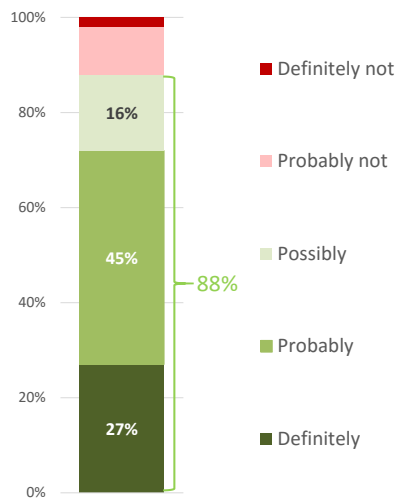
Participants also provided a range of comments and questions on their forms. These have been provided in verbatim form in Appendix B, so that they can be seen in their full context.

Household heating and cooling

Participants found the information provided about heating and cooling quite effective, although they would have liked more detail on this topic.

After the workshop over two thirds of participants would *at least probably* consider electric household heating technology. Around half felt they understood the technology better, and a similar proportion were more positive towards the technology. Only one participant felt there was too much detail, and nearly half felt they would have liked more detail.

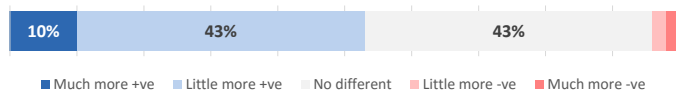
Given what we just talked about, if you were to build a new house sometime soon – how likely would you be to consider using this electric technology for your heating and cooling?



Do you feel that you understand the current technology for electric heating and cooling better?



Has the information made you feel any more or less positive about electric heating and cooling than when you arrived this evening?



Questions and Comments

Below is a list of the questions and comments respondents made in this section of their questionnaires:

Practical on solar?

Geo thermal energy?

Not looked at.

Noisy heat pumps.

Projection of price increases when elec becomes a monopoly.

Not comparing like with like.

Discussion did acknowledge the energy rating of the house - this still is a critical factor in heating/cooling + gas or electricity systems remain the same in my mind.

What about systems such as <word> and vents?

Heat pumps can be noisy especially in high density living. How will this be dealt with?

Most new houses only have <word> heaters - are all new building in Ginninderry mandated effective heating?



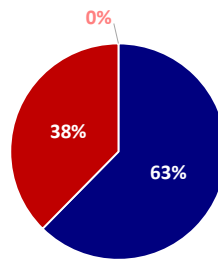
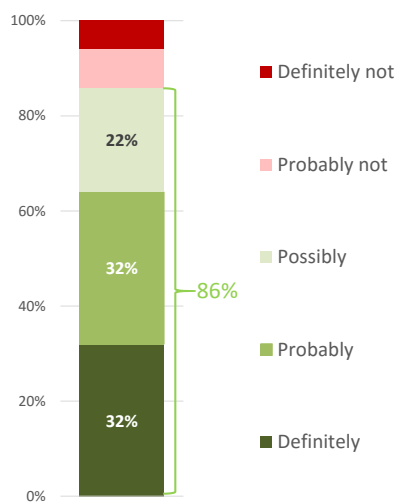
What alternatives are there to reverse cycle?	How passive heating enabled will the dwellings in Ginninderry be?	Is bottled gas for cooking an option.
The only electric method shown was RCAC. Comparison with other systems needed.		
Is electric heating as cost effective as gas heating?		
Gas or electrical production on environment		
I still have questions about the environmental effects of both. Comparison?		
I always thought electric heating was more expensive than gas. Not true!		
What about under floor electric heating?		
Cost of converting existing systems?		
Why have you not dealt with noise for users neighbours?	Why limit electric options to reverse cycle air conditioner? What about hydronic heating?	
Developing <word> price with international markets.		
If a heat pump is a conveyer belt, how is it heating?	Can 4 units maintain a constant temp throughout every room? My experience is that they generate hot + cold patches. I sat under one at work and had to put a jumper on and off all day.	
Comment: Relying on one energy source and supplier is a concern.		
Would like to see more control on building standard + materials used to reduce energy use.		
I think there is benefit is further explaining the reliability/resilience of electric only developments		
What are the maintenance costs?	How well does it actually work? Ie How quickly does it heat the house & how warm does it feel.	What are the negatives? Not discussed unless raised.
Does reverse cycle heating and cooling need a lot of maintenance?		
Costs - The cost of the electrical system is about 60% more over the cycle.		
In ACT there is really ONE supplier of Gas Elect and Water, so no competition.		
Questions - what are the costs over time - gas cheaper up front + lasts up to 10 years longer > that seemed to outweigh the slightly higher annual running cost. A positive is reverse cycle gives cooling - not sure how these costs accounted for noise. Noise has been an issue for my electric heating + heat pumps not up to canberra winter.		
Because passive solar was not discussed I cannot consider electricity in context.	Would like more discussion/info about mandating solar passive.	So what is the predicted cost of electricity into future?

Hot Water

The impact of the workshop for hot water was similar for household heating. Around 2-in-3 participants would *at least probably* consider electric hot water technology; and the proportion who felt more positive and that they understood the technology better were both up over 3-in-5.

A third of participants wanted more detail in this area compared to what was presented.

Given what we just talked about, if you were to build a new house sometime soon – how likely would you be to consider using this electric technology for your **hot water**?



Level of detail provided

- Too much detail
- About right
- Not enough detail

Do you feel that you understand the current technology for electric hot water better?



Has the information made you feel any more or less positive about electric hot water than when you arrived this evening?



Questions

Below is a list of the questions and comments respondents made in this section of their questionnaires:

Solar?

None

Solar (power) hot water

Wind power (energy) for hot H2O.

See above written in [Refer to q15. Lots of open questions. Why not reverse cycle boosted solar hot water?

Why discount solar hot water?

How do other options stack up?

<word> waters make no noise

Not all heat pumps are created equal. Some are poop performers in depth of winter.



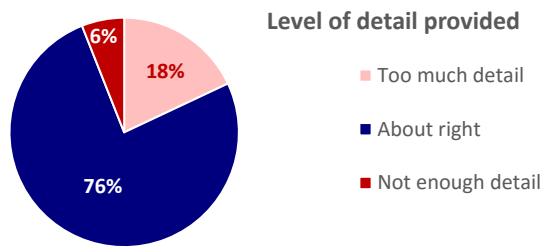
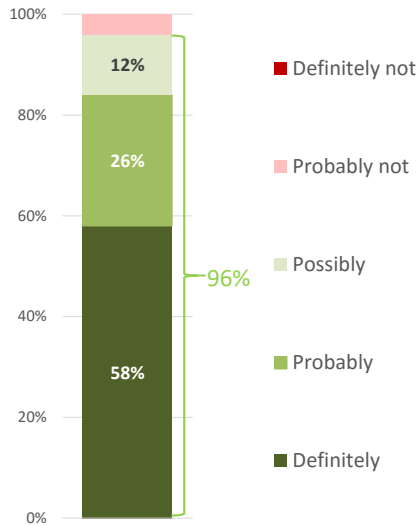
CO2 effects - long term for different systems.		
Environmental effects - comparison.		
How many electricity service providers will be available to residents?		
What about instant gas hot water? Only heats when required.		Need to compare maintenance costs
Prefer solar		
Cost of converting existing systems?		
Need to explain a bit more on the technology to understand better. Simple explanation of heat pump concepts.		
No question just comment: Heavy sell on electricity. Not all information given is correct.		
As before, why noise/decibels not covered?		
The delivery seemed to be only an ad for the electrical systems without addressing the 'minor' details.		
Is it instant or stored?	What is the activation time for a heat pump to heat water?	
Appliance life-span is a concern	Mass heat pump use will affect local ambient temperature.	
Would like to see choice to go off the grid.		
More information of cumulative noise		
Maintenance costs.	Could have discussed the solar panels links more.	What are the negatives? Need to know pros + cons to make a decision.
No question because I already use electric hot water system generated by solar energy.		
How does the heat pump work? Does it store hot water for later, heat as it goes through?		
Consider impact when broken > not when payed. Noise reliability - my last heat pump lasted 18 months before being so loud it could be heard 35m away that was after 2 repairs.		
How noisy?	Storage/hot water running out when visitors/heavy usage periods.	Heat pollution in surrounding area from heat pumps
I would like info to compare evacuated tubes with heat exchange.		

Cooking

Probably not surprisingly given the emphasis on the cooking demonstration in the workshop, the results from the cooking section were even more positive. Following the session over 80% of participants would *at least probably* consider electric induction cooking technology, and 90% felt they understood the technology better and were more positively disposed towards it.

Three-quarters felt that the level of detail was about right, and if anything some found it too much.

Given what we just talked about, if you were to build a new house sometime soon – how likely would you be to consider using this electric technology for your household cooking?



Do you feel that you understand the current technology for electric induction cooking better?



Has the information made you feel any more or less positive about electric induction cooking than when you arrived this evening?



Questions

Below is a list of the questions and comments respondents made in this section of their questionnaires:

- What is the wattage of induction? Are these smaller? How practical is it to have induction on limited solar?
- Used induction cooking for years.
- Health concerns from use of magnetic medium in cooking medium in cooking. Has there been any independent study <word>?
- Smokes & Mirrors. Trucks rip up roads putting gas lines in.
- I'm concerned about the safety of bottled gas.
- There is no induction oven as yet so you would have to invest in a conventional gas/electric oven as well as the cooktop
- Great presentation!
- Considering I calculate to heat/gas/degree etc what are the actual stats for heat used cost etc. Even considering efficiency.
- I like the evacuated tubes for hot water



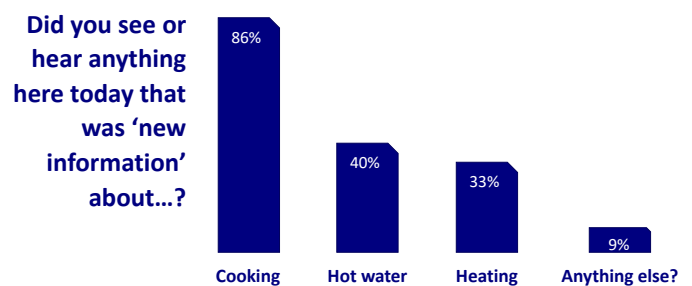
Final Dispositions

The main point of the combined survey and workshop formats was to estimate what proportion of the population had a preference for gas, and then explore whether they could be swayed to consider a gas network free suburb. If they *could* be swayed, then the commercial risk would be much less.

The **workshop results suggest that it is possible to sway opinions**. The combination of the discourse with participants during and after the workshop and their survey responses indicated there were definite movements in opinion as a result of the information provided. In particular, the cooking demonstration was very effective, and resulted in virtually all participants being more positive towards induction electric cooking. No strategy will be 100% effective in encouraging consideration, but it was clear that substantial positive movement can be expected.

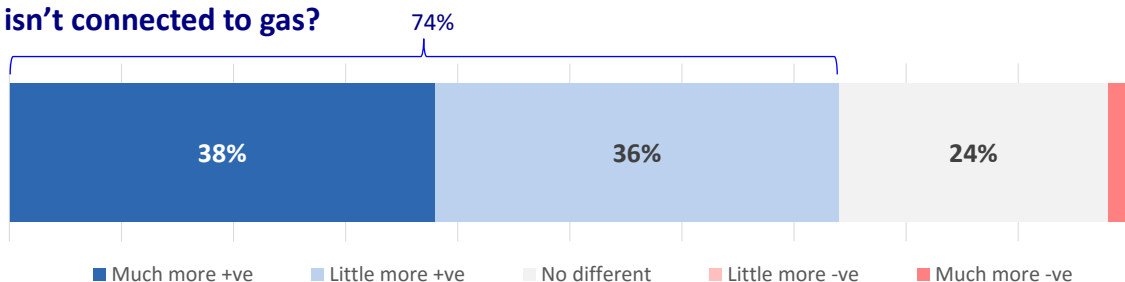
It was anticipated prior to the workshop that cooking might be the biggest barrier, that there would be a segment of people whose preference for gas cooking might be very strong. However, the survey results didn't show cooking to be any more of a source of gas preferences than hot water or household heating, and in fact the conversations during the workshop suggested that household heating may be the more challenging barrier. Aside from the ability to heat, participants also focussed on the practicalities of the technologies in their conversations, for example, identifying that the noise associated with heat pumps (especially as heaters) could be a concern.

The workshops *did* give participants new information. Almost all felt they saw something new about cooking, and 40% and 33% said they did about hot water and heating respectively. A list of what people felt was new information has been provided in a table in Appendix B.



More importantly, the workshop had a generally positive impact on their views about buying in a gas network-free suburb. While the effect was more marked on those who had no particular preference for gas – two thirds of those with a gas preference were more positive, which is direct group of interest to the exercise.

Did today's workshop make you feel any differently about living in a house that isn't connected to gas?



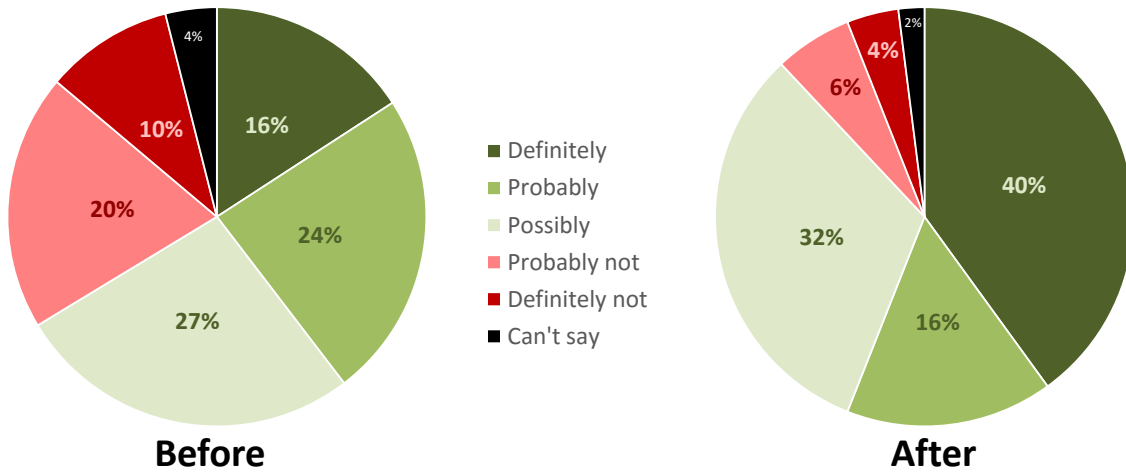
Those with any gas preference (75% of participants) → 65% more positive

Those with no gas preference (25% of participants) → 100% more positive



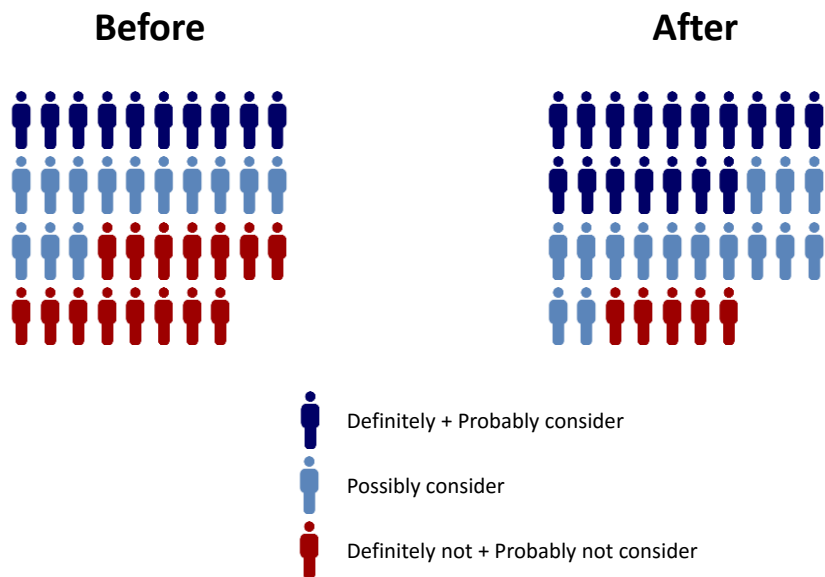
This was supported in re-asking the question about willingness to consider a gas network-free suburb at the end of the workshop. The overall proportion who would *definitely + probably* consider it went from 40% to 56%, and the proportion who would *at least possibly* consider it went from 67% to 88%.

WORKSHOP: Would you consider buying a house in a suburb you like that only had electricity connections, but not gas?



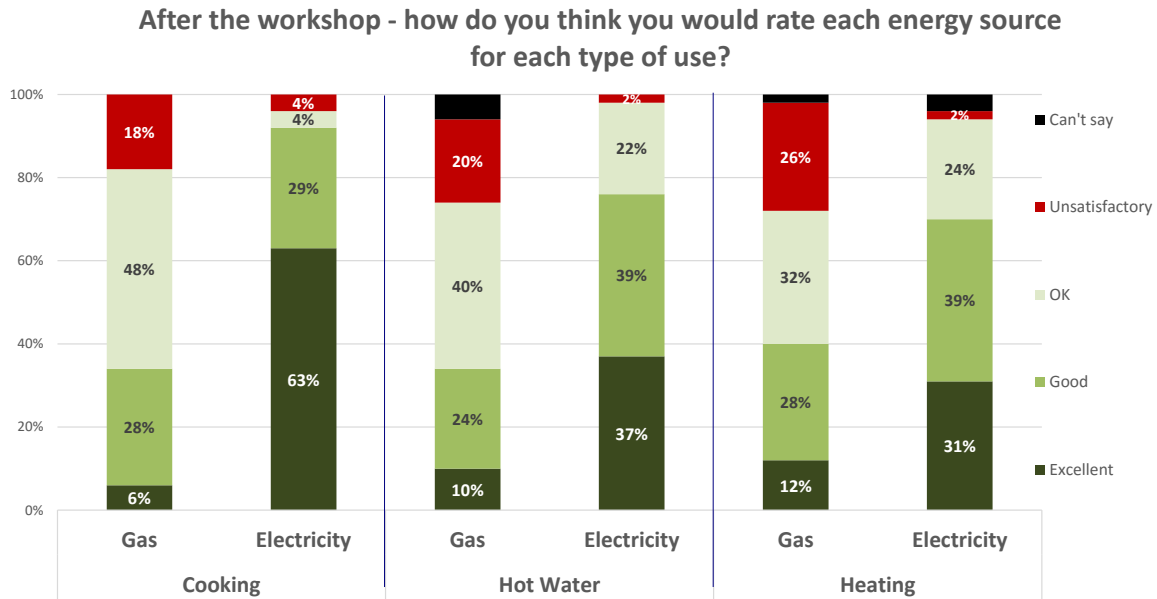
As would be expected, again the effect was less marked amongst that key audience of people with a gas preference, but it was still seen.

Just 10 of the 38 people with any gas preference would *definitely or probably* have considered a no-gas suburb at the commencement of the survey, and 23 of 38 would *at least possibly* have done so. These figures increased to 18 of 37 (*definitely or probably*) and 32 of 37 (*at least possibly*) after the workshop.



One final test of the impact of the workshop was how people felt about using electricity at the end of the session. As the chart below shows, virtually all participants ended up with the view that electricity would be *at least ok* for all three uses (which obviously includes those who have a gas preferences).

Not only was the final perception about electricity actually considerably more positive than gas – it showed that after being exposed to the type of material covered in the workshops (and with the caveat that we can’t know how durable this effect is), almost everyone reached a minimum threshold where the absence of gas should not appear as an insurmountable barrier.



In terms of the ‘proof-of-concept’ that the workshop wanted to see if it could achieve – this result strongly suggests that it is indeed possible to sway people who are initially less disposed to the concept to at least consider a gas network-free suburb through the types of fairly simple information provided in the workshop.

Appendix A: The Questionnaires

Telephone Survey and Recruitment

Good ____, my name is ____ and I am calling from ORIMA Research on behalf of Riverview Projects.

We are conducting a quick survey of Canberra households to identify your main energy source and preferences for heating, cooking and hot water. Can I ask you a few questions about this right now?

IF YES → Continue

IF NO → Thank and end.

1. Do you currently use gas or electricity for:

		Gas	Electricity	Something else	Don't know	Don't have it
A	Cooking	1	2	3	4	5
B	Hot water	1	2	3	4	5
C	Household heating	1	2	3	4	5

Ask Q2 where Q1 a-c = 1, 2 or 4

2. How would you describe your preference for using gas for the following day-to-day functions in your home? **READ OUT**

		I would only use Gas	I have a preference for Gas	I don't have a strong preference for gas or for electricity	I have a preference for electricity	I would only use electricity	Can't say / Don't know
A	For cooking	1	2	3	4	5	6
B	For hot water	1	2	3	4	5	6
C	For household heating	1	2	3	4	6	6

3. [If Q2a-c = 1 or 2 ask] Would you consider buying a house in a suburb you like that only had electricity connections, but not gas?
 1. Definitely
 2. Probably
 3. Possibly
 4. Probably not
 5. Definitely not
 6. Can't say **DO NOT READ**

ASK IF Q3 = 3, 4 or 5, all else go to Demographics

4. If it was easy to install and maintain a bottled gas system, would that change your mind about living in a house without the gas network?
 1. Definitely
 2. Probably
 3. Possibly
 4. Probably not
 5. Definitely not
 6. Can't say DO NOT READ

DEMOGRAPHICS

5. Do you currently live: READ OUT
 1. In a home you own or have a mortgage for
 2. Rent or pay board
 3. Other. Please specify _____

6. Which region of Canberra do you live in? READ OUT IF NECESSARY
 1. Gungahlin [PRONOUNCED Gun-ga-lin]
 2. Belconnen
 3. Inner North
 4. Inner South
 5. Woden
 6. Weston Creek – Molonglo [PRONOUNCED M-long-galow]
 7. Tuggeranong [PRONOUNCED Tug-ranong]
 8. Somewhere else. Specify _____

7. Which of these age groups do you fit into
 9. 18-29
 10. 30-39
 11. 40-49
 12. 50-59
 13. 60 or over
 14. Refused DO NOT READ

8. RECORD GENDER
 1. Male
 2. Female
 3. Other

9. How likely are you to buy a house in the Canberra region within the next 5 years?
 1. Definitely
 2. Probably
 3. Possibly
 4. Probably not
 5. Definitely not
 6. Can't say

If respondent fits the following criteria, ask Q 10:

- Priority 1 participant: Q2a-c = 1 (i.e. gas only for all activities)
- Priority 2 participant: Q2a = 1 or 2 (i.e. gas only or has a preference for gas in cooking)

10. We're also conducting some workshops on the evening of Tuesday 20th September, where there will be a cooking demonstration using gas and induction stove tops. There will also be a number of activities to help us better understand people's preferences for gas as a primary source of energy.

The workshops go for an hour and a half at the Belconnen Fresh Food Markets, and participants will get an \$80 gift voucher to thank them for their time and thoughts. There is a workshop at 5.30pm and at 7.30pm.

Would you be willing to attend one of these workshops and share your ideas about your preferences?

1. Yes - Obtain contact details
2. No - thank and end.

Did you attend the previous community workshop in June? Yes No

Household Energy Workshop Individual Feedback Form

Do this page before the workshop starts

1. What do you currently use:

		Gas	Electricity	Something else	Don't know	Don't have it
A	For cooking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	For hot water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	For household heating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. What do you prefer?

		I would <u>only</u> use gas	I prefer gas	I don't have a strong preference	I prefer electricity	I would <u>only</u> use electricity	Can't say / Don't know
A	For cooking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	For hot water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	For household heating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Think about your PREFERRED energy source:

3. What is the main thing that makes you prefer this type of energy?

A	For cooking:
B	For hot water:
C	For household heating:

Think now about your NON-PREFERRED energy source:

4. When – if ever - did you last have personal experience of using this?

		Currently	In the last year	In the last 2-5 years	In the last 6-10 years	Longer ago	Never
A	For cooking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	For hot water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	For household heating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. How do you think you would rate your non-preferred energy source if you had to use it?

		Excellent	Good	OK	Unsatisfactory	Really can't say
A	For cooking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	For hot water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	For household heating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Would you consider buying a house in a suburb you like that only had electricity connections, but not gas?

Definitely Probably Possibly Probably not Definitely not Really can't say

7. Are you...?

Male Female → Gen Y [18-34] Gen X [35-49] Boomers B [50-64] Boomers A [65+]

8. Do you own your home, rent or pay board?

Own home Rent Pay board Something else

STOP here for now! We will do the rest of this form during the workshop.

Part 2: The Ginninderry “no gas” proposition

1. How do you personally feel about the idea of not building gas into the new suburb at Ginninderry?

← Good idea	Neutral idea	Bad idea →	Not sure
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. How convincing do you personally find each of the reasons we are considering not building a gas network?

		Very convincing	Quite convincing	Not very convincing	Not at all convincing	Really can't say
A	The economic reasons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	The environmental reasons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	The social / personal reasons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

A	B	C
---	---	---

Part 3: Household Heating and Cooling

3. Given what we have just talked about, if you were to build a new house sometime soon – how likely would you be to consider using this electric technology for your heating and cooling?

<input type="radio"/> Definitely	<input type="radio"/> Probably	<input type="radio"/> Possibly	<input type="radio"/> Probably not	<input type="radio"/> Definitely not	<input type="radio"/> Really can't say
----------------------------------	--------------------------------	--------------------------------	------------------------------------	--------------------------------------	--

4. Did you find the level of detail in the information we covered to be...

<input type="radio"/> Too much detail	<input type="radio"/> About right	<input type="radio"/> Not enough detail
---------------------------------------	-----------------------------------	---

5. Do you feel that you understand the current technology for electric heating and cooling better?

<input type="radio"/> Yes – much better	<input type="radio"/> Yes – a little better	<input type="radio"/> No better than where I started	<input type="radio"/> No – I'm more confused now	<input type="radio"/> Really can't say
---	---	--	--	--

6. Has the information made you feel any more or less positive about electric heating and cooling than when you arrived this evening?

<input type="radio"/> Yes – much <u>more</u> positive	<input type="radio"/> Yes – a little <u>more</u> positive	<input type="radio"/> No different to where I started	<input type="radio"/> Yes – a little <u>less</u> positive	<input type="radio"/> Yes – much <u>less</u> positive	<input type="radio"/> Really can't say
---	---	---	---	---	--

A. What questions do you still have?	B.	C.
--------------------------------------	----	----



Part 4: Hot Water

1. Given what we have just talked about, if you were to build a new house sometime soon – how likely would you be to consider using this electric technology for your hot water?

<input type="radio"/> Definitely	<input type="radio"/> Probably	<input type="radio"/> Possibly	<input type="radio"/> Probably not	<input type="radio"/> Definitely not	<input type="radio"/> Really can't say
----------------------------------	--------------------------------	--------------------------------	------------------------------------	--------------------------------------	--

2. Did you find the level of detail in the information we covered...

<input type="radio"/> Too much detail	<input type="radio"/> About right	<input type="radio"/> Not enough detail
---------------------------------------	-----------------------------------	---

3. Do you feel that you understand the current technology for electric hot water better?

<input type="radio"/> Yes – much better	<input type="radio"/> Yes – a little better	<input type="radio"/> No better than where I started	<input type="radio"/> No – I'm more confused now	<input type="radio"/> Really can't say
---	---	--	--	--

4. Has the information made you feel any more or less positive about electric hot water than when you arrived this evening?

<input type="radio"/> Yes – much <u>more</u> positive	<input type="radio"/> Yes – a little <u>more</u> positive	<input type="radio"/> No different to where I started	<input type="radio"/> Yes – a little <u>less</u> positive	<input type="radio"/> Yes – much <u>less</u> positive	<input type="radio"/> Really can't say
---	---	---	---	---	--

A. What questions do you still have?	B.	C.
--------------------------------------	----	----

Part 5: Cooking

5. Given what we have just talked about, if you were to build a new house sometime soon – how likely would you be to consider using this electric induction technology for your household cooking?

<input type="radio"/> Definitely	<input type="radio"/> Probably	<input type="radio"/> Possibly	<input type="radio"/> Probably not	<input type="radio"/> Definitely not	<input type="radio"/> Really can't say
----------------------------------	--------------------------------	--------------------------------	------------------------------------	--------------------------------------	--

6. Did you find the level of detail in the information we covered...

<input type="radio"/> Too much detail	<input type="radio"/> About right	<input type="radio"/> Not enough detail
---------------------------------------	-----------------------------------	---

7. Do you feel that you understand electric induction cooking better?

<input type="radio"/> Yes – much better	<input type="radio"/> Yes – a little better	<input type="radio"/> No better than where I started	<input type="radio"/> No – I'm more confused now	<input type="radio"/> Really can't say
---	---	--	--	--

8. Has the information made you feel any more or less positive about electric induction cooking than when you arrived this evening?

<input type="radio"/> Yes – much <u>more</u> positive	<input type="radio"/> Yes – a little <u>more</u> positive	<input type="radio"/> No different to where I started	<input type="radio"/> Yes – a little <u>less</u> positive	<input type="radio"/> Yes – much <u>less</u> positive	<input type="radio"/> Really can't say
---	---	---	---	---	--

9. Given the information tonight – if you still prefer to use gas for cooking, would you consider a gas bottle system in a house not connected to the gas network to be a reasonable solution?

<input type="radio"/> NA – I'd be happy to use electric	<input type="radio"/> Yes – gas bottles would be totally fine	<input type="radio"/> Yes – I think gas bottles could work	<input type="radio"/> Yes – but only as a last resort	<input type="radio"/> No – I wouldn't want to use gas bottles	<input type="radio"/> Really can't say
---	---	--	---	---	--

A. What questions do you still have?	B.	C.
--------------------------------------	----	----



Please only complete this last page at the end of the workshop when asked to do so!

1. Did you see or hear anything here today that was ‘new information’ about...?

Cooking	<input type="radio"/> No	<input type="radio"/> Yes – what?
Hot water	<input type="radio"/> No	<input type="radio"/> Yes – what?
Household heating	<input type="radio"/> No	<input type="radio"/> Yes – what?
Anything else	<input type="radio"/> No	<input type="radio"/> Yes – what?

2. Did today’s workshop make you feel any differently about living in a house that isn’t connected to gas?

<input type="radio"/> Yes – much <u>more</u> positive	<input type="radio"/> Yes – a little <u>more</u> positive	<input type="radio"/> No – no different to where I started	<input type="radio"/> Yes – a little <u>less</u> positive	<input type="radio"/> Yes – much <u>less</u> positive	<input type="radio"/> Really can’t say
---	---	--	---	---	--

3. After the discussions tonight, would you consider buying a house in a suburb you like that only had electricity connections, but not gas?

<input type="radio"/> Definitely	<input type="radio"/> Probably	<input type="radio"/> Possibly	<input type="radio"/> Probably not	<input type="radio"/> Definitely not	<input type="radio"/> Really can’t say
----------------------------------	--------------------------------	--------------------------------	------------------------------------	--------------------------------------	--

4. If your opinion changed at all – what was the influential information out of today?

Cooking	
Hot water	
Household heating	
Something else	

5. After today’s workshop – how do you think you would rate using GAS for...?

		Excellent	Good	OK	Unsatisfactory	Really can’t say
A	Cooking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	Hot water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	Household heating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. After today’s workshop – how do you think you would rate using ELECTRICITY for...?

		Excellent	Good	OK	Unsatisfactory	Really can’t say
A	Cooking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	Hot water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	Household heating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Do you have any other comments about what you have seen and heard tonight?

Thanks for coming along tonight! We really appreciate your time and thoughts.



Appendix B: comments and questions about the “no-gas” option for Ginninderry

Q9 Rating 1-3 = 'good idea' 4 = neutral 5-7 = 'bad idea' 8 = not sure		Comment(s)	
1	Totally sold on induction cooking - hitherto I was ignorant of it		
1	If solar is also used	The only way to make power sustainable.	I do not understand the social/personal reasons.
1	Eliminating the annual costs for gas makes sense economically.	Yes but could be better explained.	Global warming is enormous threat and we need to avoid it.
1	What size PV system is mandated? Do they have storage as well? Why not go all the way and not have an electric grid? What is EER rating of the home?	Gas vs Grid. Coal powered electricity is okay. Gas vs 100% sustainable is not but can we guarantee 100% sustainable.	What are they? Environmental sustainable.
1	It's hard to know how the costs will play out.	I think there's limited awareness of the environmental reasons	Not clear what these are
1	People could sell electricity from their solar panels directly to other people making selling price higher and buying price lower.		
2	Knowledge resources for solar	Who is doing the renewable energy innovation in ACT	Efficient heating and cooling research?
2	Mandatory solar panels - people would want to know whether they will have assistance to have these - or understand that this is a better system/faculty (utility) that is already installed ie in lieu of gas.	"No emissions from electricity generation?" - careful!	The goal to be sustainable and 'trailblazer' is good and convincing for younger generation.
2	Energy efficiency need to be considered holistically. Solar positive + good insulation + effective heating = cheaper/sustainable		
2	I hadn't considered doubling up on infrastructure price	Including connections costs would make housing more affordable.	
2	Simple energy supply makes more sense.	If electricity can come from PV panels then less pollution.	Prefer energy that is more efficient.
2	Total cost of ownership comparison was not clear.		
3	Given we have a monopoly, ActewAGL will Ginninderry provide options other than ActewAGL?	Like the idea of battery stations	

Q9 Rating 1-3 = 'good idea' 4 = neutral 5-7 = 'bad idea' 8 = not sure		Comment(s)	
3	Long time frame for development may not result in suggested outcomes.	How connected is the development & the grid?	
3	As long as electricity produced isn't a <word word> full way of creating energy its fine to me.		
4	Electricity may have less side effects but gas in combo may be a good idea?	Is gas really less environmentally sound than electricity?	
4	Am not convinced by the figures. Like to have options.	Enviro reasons are perhaps the main reason I would consider out electric.	
4	Significant difference in cost has a strong case for change.		
4	Gas bills have been increasing every quarter even when I hardly use it.	Gas can cause disaster when the pipe burst - fire etc.	Gas is not really that good compared with electricity. Solar can translate into electricity but gas cannot.
4	What does & look like with solar panels/grids/storing + gas - data seems quite skewed best vs worse case.		
4	Need more info about solar etc will be mandated in the development + costs of mandating.	Need more info - data etc about environment benefits to convince me.	Need info about expected change of gas costs data - new develops coming on line.
4	Electricity can be made in the ACT & onsite but gas fields are a long way away.		
5	I like having a main connected gas BBQ as it doesn't run out mid-cooking.		
6	What about solar systems!		
6	To give the choice of having gas + electricity would like lower electricity unit prices. Would like to go off the grid.	Having only one source offers competition = monopoly.	
6	Elect emits large amount of pollutions/carbon		
7	What would cost of refitting gas be if this is wrong approach?	Who's to say supply charges won't rise if monopoly supplier.	
8	Are the set-up costs expensive - panels, batteries etc.	Has environmental cost of manufacturing PV infrastructure - cells, batteries etc been factored in?	
8	Why not go off the grid?		

Appendix C: New Information for Workshop Participants

If you saw information in the workshop that was new – what was it?

About cooking	About hot water	About heating	About anything else
Electric more efficient, induction cooking is great	A tiny bit more info about heat pump hot water	Costs/Alternatives	How heat pumps work
Faster than I thought	Cost comparison	Efficiency of electric /reverse cycle heating	The block size at Ginninderry is small. Heat pumps are noisy.
Had never seen an induction cooktop demo before	Cost effective	Electric more efficient	Whole concept of building suburb gas free.
How induction cooktops work.	Costs/alternatives	Explanation of heat pump	
How induction pans & cooktops work	Efficiency of a heat pump	Gas is very expensive	
I'm buying a convention cooktop next time.	Electric more efficient	Heat pump	
Induction	Explanation of heat pump	Heat pump	
Induction	Heat pump	Heat pump	
Induction	Heat pump	No time	
Induction	Heat pump HWS	Noise + issue with heat pumps	
Induction	Heat pumps	Price	
Induction	Just technology has improved	Reverse cycle a/c	
Induction cook top is a definite must have.	New technologies	Reverse cycle v/s ducted.	
Induction cooking	Noise & heat issue with heat pumps	Use of multiple reverse cycle units and their efficiency/ effectiveness	
Induction cooking	Price	Yes but I didn't understand...	
Induction cooking	Relative cost information		
Induction cooking	The statistics on efficiency.		
Induction cooking	Water pump - noise		
Induction cooking is fantastic, Im a convert.	Yes but I didn't understand...		
Induction cooking many advantages			
Induction cooking process			
Induction cooling			
Induction demonstration.			

About cooking	About hot water	About heating	About anything else
Induction heating			
Induction is about as good as gas + better in other ways.			
Induction is awesome			
Induction performance			
Induction stove top			
Induction system vs other sources			
Induction Top			
Induction v/s ducted			
Induction cooking			
Learning more about induction (have heard some at <word> previously).			
low temp for melting choc			
More info about induction			
Newspaper; melt chocolate			
Putting newspaper under frying pan to catch mess on induction cooktop			
Relative efficiency of induction, ceramic and gas.			
The <word> of heat transference.			
The advantages of induction for cooking			
The glory of induction			