WILLINGNESS TO PAY RESEARCH STUDY

Appendices to the Report
For ActewAGL and ACTEW Corporation

Prepared by NERA and ACNielsen

August 2003
Sydney

Project Team:

NERA:
Dr Kenneth Train
Professor David Hensher
Nina Shore
Greg Houston
Michelle Hancock

ACNielsen:
Anna Corluka
Dr Peter Bone

n/e/r/a
National Economic Research Associates
Economic Consultants

Level 6, 50 Bridge Street
Sydney NSW 2000
Australia

Tel: (+61) 2 8272 6500
Fax: (+61) 2 8272 6549
Web: http://www.nera.com

An MMC Company

ACNielsen Research Pty Ltd

Level 1, 479 St Kilda Road
Melbourne Victoria 3004
Australia

Tel: (+61) 3 9207 3800
Fax: (+61) 3 9207 3999
Web: http://www.acnielsen.com.au

TABLE OF CONTENTS

APPENDIX A. TERMS OF REFERENCE

ActewAGL House 221 London Circuit Canberra ACT 2601 • GPO Box 366 Canberra ACT 2601

***Telephone** 02 6248 3111 **Facsimile** 02 6249 7237 www.actewagl.com.au*

Commercial in Confidence

ACTEWAGL & ACTEW CORPORATION LIMITED WILLINGNESS TO PAY RESEARCH STUDY 2002

ActewAGL is an electricity, natural gas, water and sewerage services utility that is based in the Australian Capital Territory.

Ownership of ActewAGL is shared equally between AGL and the government owned ACTEW Corporation. ActewAGL is organised as two partnerships, one distribution and one retail. ActewAGL Distribution partners are ACTEW Distribution Limited and AGL Gas Company (ACT) Ltd. The ActewAGL Retail partners are ACTEW Retail Limited and AGL ACT Retail Investments Pty Ltd.

The ACT's water and wastewater assets remain public property as ACTEW Corporation retains 100 per cent ownership of these assets. ActewAGL provides water and wastewater services under contract.

The Independent Competition and Regulatory Commission (ICRC) is an independent statutory body set up to regulate pricing, access to services and infrastructure, and other matters relating to electricity, natural gas, water and sewerage utilities. Within regulated industries, the main functions of the ICRC are to:

- Provide price directions and issue licences to utilities
- Maintain a register of agreements for access to infrastructure by competing suppliers of services such as electricity and natural gas
- Arbitrate disputes about access to services under access regimes
- Protect customers from abuses of monopoly power
- Oversee the quality, reliability and safety of services
- Regulate industry codes of practice

Prior to a forthcoming pricing review to be undertaken by the ICRC, it is important that ActewAGL commission researchers to canvass the attitudes and opinions of its customers. This is consistent with work that is currently proceeding in a number of other jurisdictions.

Research Study Objective

Consultants are required to undertake a survey of customers to establish customer willingness to pay (WTP) for:

- Existing service standards,
- Statutory requirements in relation to reliability, safety and environmental factors, and
- New or changed services & offerings,

in relation to electricity, gas, water and sewerage services within the residential, business and government segments of the ACT marketplace.

The study will provide information for the next pricing review scheduled for 2003.

Scope, Phasing & Methodology

ActewAGL is approaching a number of suitably qualified and experienced researchers. It seeks costed proposals recommending an appropriate methodology, analytical technique (or techniques) and an indication of the relevant sample sizes deemed to be essential for the overall success of a project of this nature and complexity.

Without being prescriptive, it is envisaged that the research component would have to be undertaken in at least three phases:

Phase 1: It will be necessary for the researchers to meet with ActewAGL and Actew Corporation Limited executives and staff in order to get an overview of the community's issues and concerns in addition to canvassing them for potential "testable propositions" for exploration amongst consumers in the next phase.

For example; it has been noted that there is a trend amongst regulatory authorities to incorporate incentive schemes allied to what is deemed to be acceptable service standards within their regulations. The aim is to encourage utilities to provide better standards of service to their customers or suffer the consequence of penalties for non-compliance. There is the need to test the effective cost/benefit of these arrangements from the consumers' perspective across the various product segments.

Phase 2: Logically the next step would require an exploration of the attitudes of residential, business and government customers to the issues and concerns identified in the initial phase, examine the relevance of these "testable propositions", seek out any additional "testable propositions" and establish attitudinal benchmarks as a basis for the next phase.

Phase 3: This is envisaged as the core of the project. It would be aimed at establishing the notional "customer value" and "willingness-to-pay" by market and product segment.

It should be noted that regardless of the number of phases or segmentation recommended by the researcher it is envisaged that the project deliverables would be comprised of fieldwork, analysis, conclusions and recommendations, a written report and a formal presentation of the results to the relevant parties within ActewAGL and Actew Corporation Limited.

Time Frame

The project itself is challenging but no less than the time frame in which it must be conducted.

- Requests for Proposals issued to potential suppliers by close of business August 26, 2002,
- Proposals received by ActewAGL by close of business September 2, 2002
- Selection of the preferred consultant is to take place by close of business September 6, 2002,
- The research component undertaken in the field must be completed by mid December 2002. (Thereby avoiding the potential influence of seasonal factors on data collection out in the field.)
- Analysis, conclusions and recommendations, formal reporting and presentations are to take place over December / January.

Proposal Requirements:

1. Methodology

   Your proposal should contain recommendations accompanied by a substantial degree of justification as to the specific methodology, analytical technique (or techniques) and sample sizes you envisage would be utilised throughout the project.

2. Detailed Costing

   ActewAGL requires a detailed costing relating to each phase of the project specified within your proposal.

   As an indication only, ActewAGL would prefer its suggested Phase 1 be quoted on an hourly or daily rate including all travel, accommodation and disbursements together with an estimate of time.

   Once again as an indication only, ActewAGL would prefer that Phases 2 & 3 be quoted on a fixed price basis stating the assumptions used regarding sample sizes

etc. It is recognised that these quotations may be subject to variation because elements of the scope of the project have not and cannot be defined until the project has commenced.

3. Personnel & Suppliers

   It is essential that those people and external suppliers (for example field force, consultant statistician etc) responsible for the carriage of the project be nominated together with an outline of their relevant knowledge and experience in the areas of their involvement.

4. Peer Review & Quality Assurance

   In projects of this nature involving the regulator it has become customary to embed an independent peer review and quality assurance resource. Please nominate a suitably qualified individual with whom your organisation can work and make an allowance in the quotation for the cost of this component.

5. Confidentiality

   The supplier contracted to undertake the research will be required to enter into a formal confidential agreement with ActewAGL.

6. Declaration of Existing or Potential Conflicts of Interest

   It is a requirement that potential suppliers should provide details of any matters that may give rise to either perceived, actual or potential conflicts of interests and proposed ways to address any current and/or future conflicts.

7. Ownership & Use of Research

   Ownership, copyright and exclusive use of the collected data, its analysis, and the resultant conclusions and recommendations, and reporting is to reside with ActewAGL. It is a further requirement that the data collected be supplied in an agreed file format for subsequent analysis.

8. Point of Contact & Communication

   The potential supplier should nominate a senior principal point of contact for the duration of the project in its proposal.

   The Project Owner at ActewAGL is:

   Mr David Graham
   Director Regulatory Affairs and Pricing
   ActewAGL
   221 London Circuit
   Canberra ACT 2604

Project Liaison with ActewAGL is via:
Mr David Skillman
Consultant
ActewAGL
221 London Circuit
Canberra ACT 2604

Throughout the life of the project progress reporting is required by way of an agreed medium at least once a week.

9. Lodgement

Proposals are to be lodged electronically in a pdf format by the close of business September 2, 2002 to the following e-mail address;

david.graham@actewagl.com.au;

and

david.skillman@actewagl.com.au;

10. Right to Negotiate

ActewAGL reserves the right to negotiate with suppliers before during and after the lodgement of the proposal.

APPENDIX B. SERVICE STANDARDS: THE ROLE OF THE WILLINGNESS TO PAY STUDY

This appendix details the potential role of the willingness to pay study in the context of ActewAGL and ACTEW's forthcoming regulatory review.

Specifically, we briefly set out the key ways in which service standards have typically been incorporated into regulatory regimes for utilities, and the role that the results of the willingness to pay study could play in relation to a regulatory review.

B.1. Incorporating Service Quality into the Regulatory Framework

The prices of utility services in Australia tend to be regulated under an "incentive regulation" regime. The intention of such a regime is to provide a financial incentive for businesses to reduce costs, with any cost savings being initially kept by the businesses and then, over time, passed onto customers in the form of lower prices. If regulatory oversight of the quality of service supplied to customers is absent, then such a regime may create inappropriate financial incentives for businesses to reduce costs at the expense of the quality of service provided. Ideally, the regulatory regime should provide a framework that will encourage businesses to provide an efficient mix of both quality of service and price to the customer.

There are three ways in which service quality can enter the regulatory framework:

i. via the level of service quality which is assumed to underlie the revenue requirement established for the regulated business at the time of each price review;

ii. via explicit performance incentive schemes which reward improvements in the average level of service quality over and above these targets and/or penalise a business's failure to meet the service targets embodied in the revenue requirements; and

iii. through establishing guaranteed service levels for specific aspects of service quality experienced by individual customers (or some larger sub-set of the total customer base).

Below we discuss each of these ways in which service quality can be incorporated in the regulatory regime, and highlight the ways in which the results of the proposed willingness to pay survey could be used in relation to each.

B.2. Determining Appropriate Expenditure in the Revenue Requirement

A key part of any regulatory review is the determination of operating and maintenance expenditure and capital expenditure amounts that should be reflected in the revenue requirement of the utility. The desired level of service quality will be the key driver in

determining the appropriate level of this expenditure. It is therefore important to be clear as to the level of service quality which is expected to be delivered for the revenue requirement set, ie, the service targets which are incorporated in the 'regulatory bargain'.

Regulators also need to make decisions as to the appropriate balance between improved levels of service quality - eg, a reduction in system minutes off supply in the case of electricity, or a reduced response time in the event of sewage overflow at a customer's premise - and the impact on customer prices, since improved quality will in the majority of cases require a higher level of expenditure. The difficulty for the regulator (and for the utility in putting forward their expenditure proposals) is to know the extent to which customers are willing to pay higher prices to experience improvements in quality and which aspects of service quality customers would most like to see improved.

The willingness to pay study provides evidence which ActewAGL and ACTEW can put before the regulator (the ICRC) to support expenditure plans, by highlighting which aspects of service quality are important to customers and, importantly, the value customers place on various service attributes by placing a quantum on customers' willingness to pay for service improvements, which can then be compared with the incremental costs of achieving such improvements as part of ACTEW/ActewAGL's business planning and ICRC's regulatory decision making process.

B.3. Incentive Regimes in Relation to Average Service Quality

Under current regulatory arrangements in Australia, utilities' revenue streams tend to be determined on a five yearly basis. In addition, in most cases, to the extent that utilities can reduce their costs to below the levels assumed when the revenue requirement was set they are able to keep the additional profits made. Whilst such arrangements may provide utilities with an incentive to reduce costs, it is important to ensure that such cost reductions are not made at the expense of service quality.

The maintenance of service quality often relies on forms of scrutiny brought to bear by the regulator or other consumer agencies. However, such oversight of quality by the regulator can also result in intrusive and costly regulation. As a result, many jurisdictions in Australia (such as South Australia and Victoria) are moving towards incentive schemes for the maintenance of service quality.

A key input into the design of an effective performance incentive scheme is information on customers' willingness to pay for service quality improvements. Information on customers' willingness to pay allows the incentive scheme to focus on those aspects of service quality that are of key importance to consumers. By highlighting differences between customers in terms of their willingness to pay (for example, stemming from their current level of service or the ways in which they use the utility services), it allows the incentive scheme to adequately reflect these differences. Customers' willingness to pay also provides an 'upper-bound' on the financial quantum which should be associated with service improvements.

The 'lower-bound' is represented by the incremental cost to the business of improving that aspect of service quality.

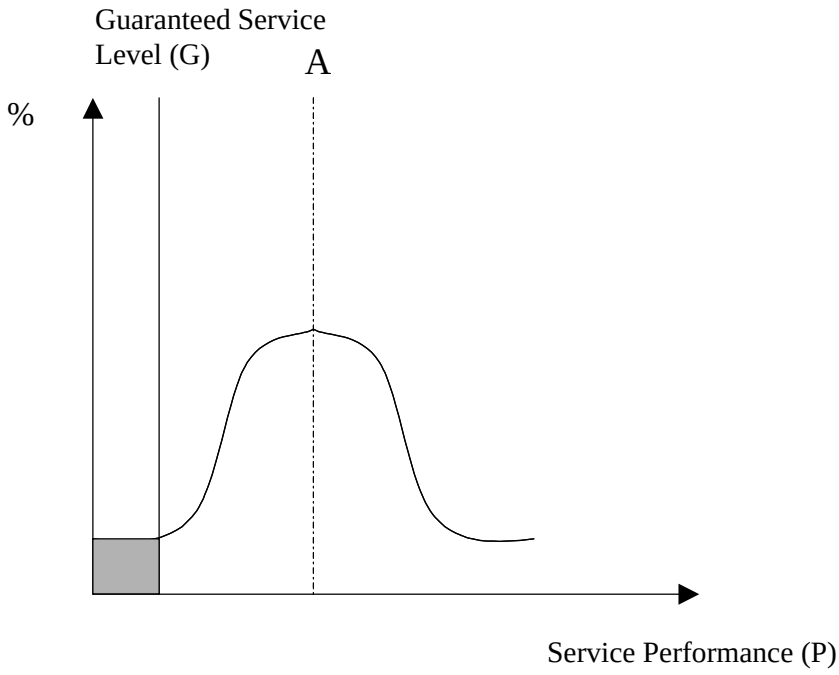
B.4. Guaranteed Service Levels

Service incentive arrangements for the maintenance or improvement of average service standards are often complemented by a system of 'guaranteed service levels' (often referred to as 'minimum standards'). These are levels of service which are specified on an individual customer basis (or as a sub-set of the total customer base) and which, if not achieved, trigger some form of penalty and/or compensation payment.

Put simply, average standards are used to provide an incentive to maintain or improve the overall quality of service experienced by customers and guaranteed service levels are used to ensure that average improvements in quality are not achieved at the unreasonable expense of particular sub-sets of the customer base.

Figure B.1 illustrates the interaction between average standards and guaranteed service levels. It shows the probability distribution of a certain level of performance, P. It is assumed that P follows the typical 'normal distribution', with an average performance level of A being achieved. However, underlying this average there will be outliers in performance – both performance which significantly exceeds the average level (shown by the right hand 'tail' of the graph), and performance which is significantly below the average level (shown by the left hand tail of the graph).

Figure B.1: Distribution of Performance Outcomes



Incentives schemes which focus on improving average service performance are designed to shift the position of "A" to the right. However, average standards alone do not necessarily encourage businesses to maintain or improve quality of services to all customers. The business may concentrate on those standards and customers where it is easy to improve performance and not concentrate on those who receive the lowest level of service – potentially worsening both efficiency and equity of outcomes. In terms of Figure B.1, a business may respond to average performance incentives by stretching the distribution to the right and the left (increasing quality to most customers while reducing the quality to the worst served customers).

Guaranteed service levels can be used to remove or control such incentives. G represents a guaranteed service level. Although the business may achieve an average performance of A, well in excess of G, there will still be individual cases where the business is in breach of this standard – such cases are indicated by the shaded area in the graph. Where individual customers (or sub-sets of customers) receive these levels of service standards, some penalty to the regulated business (eg, a financial penalty or "public shaming"), is triggered.

One potential use of the willingness to pay study is to review the current guaranteed service levels in the ACT, to assess the extent to which they reflect the key quality parameters which matter to customers and the appropriateness of the level of financial penalty and/or compensation payment associated with them.

APPENDIX C. PHASE ONE: EXISTING STANDARDS IN THE ACT FOR THE ELECTRICITY SERVICE

The ***Utilities Act 2000*** is the primary instrument governing service standards in the ACT. It applies to all utilities providing gas distribution and retail, electricity distribution and retail, water, and sewerage services.

The ***Utilities Act*** requires all utilities operating in the ACT to adhere to a range of customer service standards, and gives force to a number of industry codes of practice. These codes include:

- the Consumer Protection Code, which covers gas, electricity, water, and wastewater services. The service standards specified in the code are orientated to 'customer service' type standards such as response times to queries and complaints; and
- the Electricity Distribution Supply Standards Code, which outlines the minimum standards for the quality and reliability of electricity. For example it sets targets for the duration and number of outages.

The ***Utilities Act*** also outlines a number of rights and obligations regarding a utility's network operations. These include the right for a utility to make repairs to its network on private land, the right of the landowner to receive notification of such repairs and the requirement for the utility to minimise any damage to the property.

The specific provisions in the ***Utilities Act*** and the industry codes, as they relate to electricity, are outlined below.

C.1. General Legislated Service Standards

As noted, a utility is required to meet a number of performance and service standards as outlined in the ***Utilities Act*** and Consumer Protection Code for each of its services. A utility is exempt from these standards to the extent that alternative arrangements have been agreed between the utility and the customer, and/or "events and conditions, outside of the control of the utility, including emergencies declared under the ***Emergency Management Act 1999***, prevent the utility from complying with the performance standard".

C.1.1. Utilities Act[1]

The ***Utilities Act*** (division 7.3) requires ActewAGL to meet and report on a number of standards for each utility service, including:

[1] A copy of the ***Utilities Act 2000*** is available at http://www.icrc.act.gov.au/WhatsNew/index.html.

- connect or vary connections when requested;
- limit damage etc to landholders' property;
- provide notice to landholders when undertaking network operations;
- provide notice to any other affected utility when undertaking network operations;
- restore landholders' property after undertaking network operations; and
- ensure all authorised persons are issued with identity cards and receive any necessary training.

In 2001/02, ActewAGL met all of the standards required by the ***Utilities Act***, with the exception of the following:[2]

- ActewAGL received 28 complaints regarding damage to property;
- 3 complaints were received concerning a lack of notice of entry to land for the purpose of network service or tree lopping; and
- ActewAGL received 36 complaints about the lack of removal of property and waste, or the restoration of affected land, after the completion of network operations.

ActewAGL paid no rebates in 2001/02 for the above service standard violations, however 91 claims for compensation for damage were paid to a total of $35,810.

C.1.2. General Environmental Standards

ActewAGL is required to comply with a number of state, national, and international standards, including the ***ACT Environmental Protection Act 1997***, ***ISO 9002*** and ***ISO 14001***. ActewAGL must also operate within the framework of 'ecologically sustainable development'.

The ***ACT Environmental Protection Act 1997*** legislates a requirement for everyone living in the ACT to look after the environment by minimising the damage they inflict on the environment. Companies, such as ActewAGL, are required to report any harm they cause the environment through their activities, and where necessary improve their performance.

The ISO 9000 series is a set of standards for managing quality. They consist of a framework for ensuring a company produces a high quality product and include a process for continually monitoring and improving quality.[3]

---

[2] Source: ActewAGL, ***Electrical Utility (distribution and connection services) – Report to ICRC***, 2002, Appendix 3, p.3.

ISO 14001 was first published in 1996 and details the requirements for an 'environmental management system' – that is, a framework for reviewing and improving environmental performance. It applies to those environmental aspects over which the organisation has control, and can be expected to have an influence on environmental degradation, such as reducing carbon dioxide levels.[4]

C.2. Customer Service

C.2.1. Consumer Protection Code[5]

The standards set out in the Consumer Protection Code are designed to ensure ActewAGL provides a "satisfactory level of customer service, while continuing to meet pricing regulations". The following standards are established by the code:

- ***consumer connection times:*** a customer must be connected on the same day as a request is made, or by close of business the following day if the request is made after 2pm. A $60 penalty applies for each day the customer remains unconnected;[6]
- ***keeping agreed appointments:*** ActewAGL must not arrive more than 30 minutes late for an appointment unless a minimum of 1 hour's notice has been given. A minimum of 24 hours notice is required if an appointment is to be cancelled. A penalty of $20 applies if this standard is not met;[7]
- ***responding to written customer account queries:*** ActewAGL must acknowledge a customer query within 10 business days and respond within 20 business days or pay a $20 penalty;[8]
- ***responding to written customer complaints:*** if the complaint requires a visit to the customer's premises it must be acknowledged within 10 working days and

---

3 A copy of the ISO 9000 series can be found at: http://www.iso.ch/iso/en/iso9000-14000/iso9000/iso9000index.html

4 A copy of the ISO 14001 standard can be found at: http://www.iso14000-iso14001-environmental-management.com/iso14001.htm.

5 A copy of the Consumer Protection Code 2000 is available on the ICRC website.

6 For the electricity service, both the timeframe and penalty are similar to those in other Australian states. Other countries have more lenient policies, for example Italy allows up to 5 working days to arrange connection. Source: NERA, ***Review of Energy Licensing Regimes in NSW***, ***Part 3 Appendix A,*** a report prepared for the Independent Pricing and Regulatory Tribunal, January 2002, page 2. At the time of writing this report was available on the IPART website: http://www.ipart.nsw.gov.au/.

7 For electricity, the timeframes are more lenient than in other states, which require an electricity distributor to be no more than 15 minutes late. However in both Europe and America electricity companies can be up to 4 hours late before attracting a penalty. Source: ***op cit***, page 4, 17.

8 Electricity distributors in Tasmania must respond within 10 working days or attract a penalty of $30. In Massachusetts and in the UK, electricity distributors have a much shorter timeframe of 24 hours and 5 days respectively. Source: ***op cit***, page 25, 31.

responded to within 20 working days. In all other cases a response is required within 10 business days. The penalty for non-compliance is $20;[9]

- ***response time to customer notification of problem or concern:*** if the notification relates to damage to the network which has the potential to affect public health or safety, a response is required within 6 hours. All other concerns must be investigated within 48 hours. If these standards are not met, ActewAGL must pay each affected customer a $60 rebate;

- ***planned interruptions to utility services:*** at least 2 days notice of a planned interruption must be given to all customers. The supply must be reinstated as soon as possible and within 12 hours. A $50 penalty to all affected customers applies if ActewAGL fails to meet this standard;[10] and

- ***unplanned interruptions to utility services:*** a 24 hour telephone service must be established within 12 hours of being advised of an interruption, subject to a $20 penalty. Supply must be reconnected as "soon as possible".

In 2001/02, ActewAGL met all of these standards that relate to restoration of supply, with the exception of the following:[11]

- ActewAGL received 11,777 notifications of network problems that affected customer supply. Of these, 0.95 percent of responses (or 112 responses) failed to meet the performance standard specified in the Consumer Protection Code. Of this percentage, 0.18 percent was for failing to respond within 6 hours to network problems affecting public health or potentially causing damage. The remaining 0.77 percent was for failing to respond to other types of calls within 48 hours;

- there were 1,194 planned outages: ActewAGL received 71 complaints about the lack of or insufficient notice of these service interruptions; and

- the longest time any single premise was without electricity was 1283 minutes (or 21.4 hours) due to the bushfire in December 2001.

C.2.2. ActewAGL's own internal 'customer service' measures

In addition to the legislated requirements, ActewAGL has an internal target of answering 90 percent of calls within 20 seconds, and abandoning less than 2 percent of calls.[12]

---

[9] Queensland has a similar standard and penalty for the electricity industry. Electricity distributors in Spain must respond to customer claims within 5 days. Source: ***op cit***, page 17, 25.

[10] The rebate is over twice that payable in Queensland, however the time frame is similar. South Australia and Tasmania require a longer notice period but have a lower or no penalty. Similarly, electricity companies in the UK are required to give 5 days notice. Source: ***op cit***, page 22.

[11] Source: ActewAGL, ***Electrical Utility (distribution and connection services) – Report to ICRC***, 2002.

C.3. Reliability of the Network[13]

The electricity reliability standards are set out in the Consumer Protection Code and Electricity Distribution Supply Standards Code.[14] The standards that must be met by ActewAGL are as follows:

- the supply of electricity from the network to any single customer should not be disrupted by more than 4 outages exceeding 240 minutes each per year for both planned and unplanned outages;[15] and
- the supply reliability targets per annum are as follows:[16]

SUPPLY RELIABILITY TARGETS		
Parameter	Target	Units
Outage time (CAIDI) [17]	74.6	Minutes
Outage frequency (SAIFI)[18]	1.2	Number
Outage duration (SAIDI)[19]	91.0	Minutes

These indices ***exclude*** outages of less than one minute and extended outages due to storms (where 10 percent or more of customers in an area are affected).

Over recent years, ActewAGL has achieved an average number of outages per customer per year that is well below the target of 1.2. However in the periods 1996/97 and 1997/98 the

---

[12] ActewAGL ***Annual Report, 2001-2002***, page 23. A copy can be found at http://www.actewagl.com.au/publications

[13] The reliability standards in the ACT are similar to requirements in Victoria and Queensland. The UK has a stricter proposed minimum standard of a maximum of 3 outages not exceeding 180 minutes per customer per year, subject to exceptional circumstances. Portugal and Spain have targets of 12-46 and 12-24 disruptions respectively for low voltage customers depending on the number of customers in the affected area. The standard for medium voltage customers is 8-40 and 8-20 disruptions respectively. Both countries define an outage as an interruption of more than 3 minutes and have a number of exclusions such as "acts of god" and actions by third parties. In addition, cumulative hours not supplied per annum must not exceed between 6-25 hours for low volt customers and 4-10 hours for medium volt customers. Source: NERA, ***Review of Energy Licensing Regimes in NSW***, ***Part 3 Appendix A,*** a report prepared for the Independent Pricing and Regulatory Tribunal, January 2002, page 19-20.

[14] A copy of the Electricity Distribution (Supply Standards) Code 2000 is available on http://www.icrc.act.gov.au/WhatsNew/index.html.

[15] Schedule 2 of the Consumer Protection Code.

[16] Schedule 2 of the Electricity Distribution (Supply Standards) Code.

[17] CAIDI (Customer Average Interruption Duration Index): the ratio of total customer hours interrupted to the total customer interruptions ie, the average duration (in minutes) that a customer is without power when affected by an interruption to supply.

[18] SAIFI (System Average Interruption Frequency Index): the ratio of total number of customer interruptions to the total number of customers served ie, the average number of interruptions that a customer experiences each year.

[19] SAIDI (System Average Interruption Duration Index): the ratio of total customer hours interrupted to total customers served ie, the average duration (in minutes) that customers are without power each year.

target was slightly exceeded at 1.22 and 1.21 respectively.[20] In the past two years ACTEW has achieved its target with 1.1 and 1.04 for the periods 2000/01 and 2001/02 respectively.

ActewAGL's own internal target duration of unplanned outages is 'less than 40 minutes'. This target has been achieved in the majority of recent years. In 2000/01 unplanned outages totalled 34.54 minutes. In the period 2001/02 the target was slightly exceeded with 41.39 minutes of unplanned outages (not including unplanned outages directly attributable to bushfires and those due to severe windstorms occurring between 24-26 December 2001).

C.4. Voltage Quality

The voltage quality standards are set out in the Electricity Distribution Supply Standards Code. The Code requires ActewAGL, as an electricity distributor, to "take all reasonable steps" to ensure that the voltage of electricity distributed through its electricity network does not exceed:

- a 6 percent difference from the steady state voltage (five minutes average) for the low voltage network (120 volts or 240 volts); and
- a 3 percent difference from the steady state voltage (five minutes average) for the high voltage network (over 1,000 volts). [21]

In addition, ActewAGL is to "take all reasonable steps" to ensure that the number of fluctuations in voltage comply with specific standards, as outlined in the table below.

VOLTAGE DIPS[22]		
Dips down to percent of nominal volts	Max Number of Dips (per year per Point of Supply) - Urban	Max Number of Dips (per year per Point of Supply) - Rural
<30 percent	2	6
30-50 percent	20	40
50-70 percent	20	40
70-80 percent	25	50
80-90 percent	200	300

A dip is defined as a single short reduction in supply voltage generally for less than 1 second.

[20] IPRC, ***Actew's Electricity, Water and Sewerage Charges for 1999/2000 to 2003/2004***, May 1999.

[21] Schedule 1 of the Electricity Distribution (Supply Standards) Code.

[22] Ibid.

ActewAGL's reporting methods are currently insufficiently detailed to break down the number of complaints for each section. However, ActewAGL reported the total number of supply quality problems as 112, with 10 of those complaints deemed valid, ie, where ActewAGL was not meeting its required standards. In addition, 45 complaints were made regarding electromagnetic fields, and 3 notifications of lightning damage to the network were received.[23]

[23] ActewAGL, ***Electrical Utility (distribution and connection services) – Report to ICRC***, 2002, p.10 explanatory note.

APPENDIX D. PHASE ONE: A SURVEY OF OTHER RELEVANT ELECTRICITY STUDIES

D.1. Summary of Topics Typically Adopted in Other Studies/Research

The types of product attributes typically adopted in other stated preference studies for electricity, include:

- frequency and duration of service interruptions (including momentary/transient interruptions);
- voltage consistency;
- notification timing and method prior to a planned interruption;
- making and keeping appointments with customers;
- advising customers of compensation payments;
- time taken to answer the telephone at the customer call centre;
- meter reading frequency;
- time taken to connect new customers;
- response time to customer queries;
- response time to emergency events;
- repair of street lights; and
- provision of back-up supplies in the event of an emergency/extended interruption.

D.2. Experience of the Competitive Market, UK, MORI, 2001[24]

D.2.1. Objective

In 2001, the Office of Gas and Electricity Markets (OFGEM) commissioned research with the aim of establishing whether the introduction of competition into the electricity and gas markets had been successful. The Market and Operational Research Institute (MORI) was engaged to perform the customer survey, and their results are set out in the report ***Experience of the Competitive Market***.

The main objectives of the study were:[25]

---

[24] MORI, ***Experience of the Competitive Market***, January 2001, http://ofgem.gov.uk/docs2001/08_morireport.pdf

[25] ***Op cit*** p. 1

- to determine customers' awareness, knowledge and experience of electricity and gas competition;
- to consider customers' reasons for switching and not switching and their experiences of being able to switch;
- to evaluate any problems experienced with the switching process and new suppliers;
- to examine issues affecting disadvantaged customers, including prepayment meter customer, and how competition is impacting upon them;
- to evaluate views regarding service standards in the industry;
- to establish whether there are any significant differences in attitudes towards, and experiences of, competition between the electricity and gas markets; and
- to put the findings in context with the 1999 research – highlighting any significant differences.

The resulting data was used to assess the progress of competition in the electricity and gas markets and its impact on consumers.

D.2.2. Methodology

MORI conducted 2,238 interviews with domestic electricity and gas customers. These interviews were conducted face-to-face in the home. The interviewers were provided with a list of addresses in the sampling area and instructed to achieve a certain quota for age, working status and social class.

The survey was weighted to the known profile of the population by age, working status and social class. It was also weighted to the percentage of electricity switchers at the time of the fieldwork.

D.2.3. Outcome

In relation to service standards, respondents were asked to rate twelve aspects of service for electricity and gas suppliers – including:

- getting supply back quickly;
- warnings when supply is cut;
- making and keeping appointments;
- advising of compensation payments;

- answering the telephone quickly and efficiently;
- annual meter readings;
- quick and efficient supplies to new customers;
- responding quickly to prepay meter faults;
- responding quickly to bill queries;
- quarterly meter readings;
- responding quickly to letters; and
- prompt estimates for jobs.

The key findings were:

- the majority of customers considered all twelve aspects of the service 'fairly' important;
- the two most important aspects were 'restoring power' and 'advising of impending power failures';
- respondents were relatively insensitive to the ***number*** of power cuts;
- keeping appointments, advising customers of compensation payments and answering the telephone quickly and efficiently were identified as important standards;
- annual meter readings are preferred to quarterly readings;
- responding quickly to prepay meter faults is important, although mostly to those who pay by prepayment meter;
- when disruptions occur the priority for customers is a quick response to rectify the problem, followed by the provision of good, clear information at the time, and being able to get through easily on the phone;
- the majority of customers favoured retaining the concept of minimum standards of performance;
- when offered the choice of a reduction in price and abolishing minimum standards or retaining the minimum standards, the majority again preferred the latter. Those who favoured a price reduction thought that an average reduction of 29 percent in price would be appropriate;
- when asked how ***resources*** should be directed regarding the issue of power cuts, most respondents identified reducing the duration of power cuts as the first priority. The

frequency with which they happen was the second most important objective, followed by responding to questions during a power cut.

The findings of the study were consistent with those from the 1999 survey (see below).

D.3. Quality of Supply – Attitudes of Business and Domestic Electricity Customers, UK, MORI, 1999[26]

D.3.1. Objective

The quality of electricity supply and attitudes of domestic customers were surveyed in 1999 by MORI on behalf of OFGEM (then OFFER). The principle objective of the study was to determine customers' attitudes to supply interruptions and a range of possible changes to minimum service standards.

The issues covered by the survey included[27]:

- customers' expectations of supply reliability and the value placed on a secure supply;
- awareness of present standards and payment levels and views on improving/extending standards or setting new ones;
- whether, and if so how, to set standards for the level and duration of supply interruptions;
- whether companies should make standards payments even during 'extreme' weather or following supply failure for other reasons beyond the company's control;
- whether payments under the guaranteed standard for supply interruption should be made automatically by the company, without the customer having to claim; and
- customer views about communications with companies during supply interruptions.

D.3.2. Methodology

The survey consisted of two stages. The first involved a qualitative study to explore key issues. Each group consisted of between 5 and 10 individuals and lasted for approximately 1.5 hours. Quantitative questionnaires were developed after analysis of the results, focussing on the main issues that arose.

---

[26] OFFER, ***Quality of Supply – Attitudes of Business and Domestic Electricity Customers,*** January – March 1999, available at www.ofgem.gov.uk

[27] ***Op cit*** p.1

The second stage consisted of 2,029 face-to-face interviews in 184 sampling points throughout Great Britain. The sampling points were designed to ensure a representative survey of the age, working status and social class of the population. The selection of sampling points was slightly skewed to ensure at least 500 rural customers were interviewed.

The resulting data were weighted by age, working status, social class and urban/rural proportions.

D.3.3. Outcomes

Key findings were as follows:

- almost all customers considered a continuous uninterrupted power supply to be important, with 87 percent of domestic customers describing it as very important. 95 percent of customers surveyed were satisfied with the current service levels;
- three in 5 domestic customers were not willing to pay any extra on their electricity bill in return for generally improved standards of service, however 67 percent of customers would be willing to pay an average of £8.70 for ***specific*** improvements;
- 90 percent of domestic customers responded that they would like to be informed first and foremost of when a power cut will be restored. Their second most important concern was the cause of the power cut;
- the majority of domestic customers responded that they would choose shorter, more frequent power cuts over longer, less frequent cuts;
- around 40 percent of those surveyed believed suppliers should make a compensatory payment of £39.30 when a customer experiences more than an average of 2.3 power cuts;
- 17 percent of respondents stated that the same standard should apply for transients (power cuts of 1 minute or less), with an average payment of £43.70 after 4.2 transients;
- 91 percent of consumers believe penalties should apply when supply is not restored within 12 hours, reduced from the (then) current standard of 24 hours;
- the majority of customers agreed that electricity companies should not have to pay any penalties after 24 hours in the case of 'very bad weather'; and
- the majority of customers named automatic payment of claims as the most important improvement to service standards.

Overall, customers seemed satisfied with the current levels of service. There were certain improvements the customers would like to see, the most popular being automatic compensation payments.

D.4. Customers' Choice Among Retail Energy Suppliers: The Willingness-to-Pay for Service Attributes, US, 2000[28]

D.4.1. Objective

A number of states in America have opened their retail markets to competition. In an attempt to provide guidance to regulators, and to assist retailers in designing service packages, Goett, Hudson and Train completed a study on consumers' willingness to pay for various service attributes.

D.4.2. Methodology

Consumers were first approached by phone. Those that agreed to participate were then sent a package of materials, including a series of choice experiments. Each experiment consisted of 4 options. The respondents were then contacted a second time by phone and asked to choose one option for each experiment. Each customer was faced with a total of 20 choice experiments.

The experiments were designed so that each question was as specific as possible, for example "two short outages per year of 30 seconds each".

Customers were sampled from customer lists using stratified random design. Customers from companies financing the study were over-proportionately represented. Weightings were developed to ensure the sample was equivalent to a random sample over the entire population.

D.4.3. Outcomes

Two of the attributes examined in the experiments are of particular relevance to the network service. These are reliability and quality of supply.

D.4.3.1. Reliability (Power Outages Guarantee)

The options were:

- two short outages per year of 30 seconds each;
- four short outages per year of 30 seconds each;
- two outages per year of 30 minutes each; and
- four outages per year of 30 minutes each.

---

[28] Goett, Andrew, Kathleen Hudson and Kenneth Train, ***Customers' Choice Among Retail Energy Suppliers: The Willingness-to-Pay for Service Attributes,*** March 8 2000, available on http://emlab.berkeley.edu/users/train/

The study indicated that customers were willing to pay to reduce the number and duration of outages. Respondents were willing to pay, on average[29]:

- 1.21 cents per kWh to reduce outages from the base level (4 outages per year of 30 minutes each) to 2 outages per year for the same duration;
- 0.65 cents to reduce outages from 2, 30-minute outages to 4, 30-second outages; and
- 0.91 cents to reduce outages to 2, 30-second outages.

D.4.3.2. Power Fluctuations (Power Quality Guarantee)

The options consisted of:

- no noticeable fluctuations in voltage during the year (a 100 percent power quality guarantee);
- fluctuations of no more than 2 percent in voltage for a few cycles at a time, no more than 10 times during the year;
- fluctuations of no more than 2 percent in voltage for a few seconds at a time, no more than 10 times during a year; and
- fluctuations of no more than 2 percent in voltage for a few minutes at a time, no more than 10 times during a year.

The study concluded that customers were willing to pay, on average:[30]

- 0.31 cents per kWh to reduce the durations of fluctuations from a few minutes to a few seconds;
- 0.93 cents per kWh to reduce the duration of fluctuations to a few cycles; and
- 1.01 cents per kWh for a guarantee of no fluctuations.

---

[29] ***Op cit*** p. 23

[30] Goett, Andrew, Kathleen Hudson and Kenneth Train, ***Customers' Choice Among Retail Energy Suppliers: The Willingness-to-Pay for Service Attributes,*** March 8 2000 p. 24

D.5. The Cost of Power Disturbances to Industrial and Digital Economy Companies, EPRI, US, 2001[31]

D.5.1. Objective

Electric Power Research Industry's (EPRI) consortium for Electric Infrastructure for a Digital Society (CEIDS) contracted Primen to conduct a national survey to quantify the cost of power disturbances to industrial and digital economy firms in the United States. The survey was commissioned following society's increased reliance on digital circuitry and the increased sensitivity of businesses to disturbances in the power supply (both outages and power quality issues).

Three sectors of the US economy that are particularly sensitive to power disturbances were surveyed:

- the digital economy (DE)– firms relying heavily on data storage and retrieval, data processing, or research and development, eg telecommunications, the financial industry;
- continuous process manufacturing (CPM) – manufacturing facilities that continuously feed raw materials through and industrial process, eg paper, chemicals, petroleum; and
- fabrication and essential services (FES) – all other manufacturing industries, utilities and transportation facilities, water and wastewater treatment and gas utilities and pipelines.

D.5.2. Methodology

A representative sample of 985 businesses was developed, and the businesses surveyed to reflect the costs of the approximately two million industrial and digital economy businesses in the US. Screening was used to identify an individual at each firm who was knowledgeable about the facility's energy usage and the power disturbances have on business operations. The individual was then invited to complete the survey online, or by mail, depending on their preference. Respondents were presented with a set of hypothetical outage scenarios, and asked to estimate the costs the business would incur from each outage across different categories.

D.5.3. Outcome

The main results of the survey were:

---

[31] Primen, ***The Cost of Power Disturbances to Industrial and Digital Economy Companies***, submitted to EPRI's Consortium for Electric Infrastructure for a Digital Society (CEIDS), June 29, 2001.

- power outages cost collectively $US 45.7 billion annually. The majority of this loss ($US 29.2 billion) is concentrated in the FES sector, which is particularly vulnerable to equipment damage. DE firms lose $US 13.5 billion, primarily from lost productivity and idle labour. CPM firms have the highest level of losses per individual business, suffering the loss of raw materials as well as the costs incurred by other sectors;

- costs vary with the length of the outage, but even short outages are costly. Even one-second outages can damage equipment and disrupt highly sensitive operation to the point where labour becomes idle as systems are reset and brought back online. The average cost of a one second outage is $US 1,477, for a three minute outage $US 2,107 and for a one hour outage $US 7,795. Brief outages are the most frequent, with respondents reporting that approximately half of the outages experienced last less than three minutes;

- firms lose $US6.7 billion annually to power quality problems. The FES sector is the most sensitive to power quality problems, losing more than $US 9,600 per business annually and accounting for 85 percent of the aggregate losses across all three sectors. Equipment damage contributes largely to the costs incurred; and

- the survey data suggests that across all business sectors, the US economy is losing between $US 104 billion and $US 164 billion a year to outages, and between $US 15 billion and $US 24 billion due to power quality problems. Costs to other sectors were determined by extrapolating survey results, and assuming that firms outside the industries surveyed would incur costs from outages and power quality problems of between 25 percent and 50 percent of the costs incurred by respondent firms.

D.6. Service Standards for 2005 to 2010, SAIIR, Australia, 2002[32]

D.6.1. Background

This paper considers issues in the setting of service standards. These standards will apply to the electricity distribution network service provider (ETSA Utilities) in South Australia from the commencement of the next regulatory period in 2005. The anticipated outcome is the delivery of a service at a quality level desired by customers, at a price that is both consistent with customers' willingness to pay and that is high enough to permit the service provider to deliver this level of service in the long term.

In the absence of a competitive environment, the regulator must determine the 'optimal' balance between price and service. This trade-off is referred to as the concept of regulatory

[32] SAIIR, ***Service Standards for 2005 to 2010***, Discussion Paper, February, 2002. For additional detail see also: SAIIR, Developing Service Incentives for the 2005 Electricity Distribution Price Review, Discussion Paper, July 2002.

bargain. Incentives to achieve prescribed levels of service can be established using various mechanisms, including through the development of minimum standards.

Under the South Australian regulatory regime, the minimum standards are set by the Distribution Code. The Code also incorporates a performance incentive scheme to provide additional financial rewards and penalties based on performance against predetermined standards. The setting of the minimum standards and the incentive scheme form part of the regulatory bargain process set for the current (initial) regulatory period. This paper discusses the issues that need to be considered when developing a set of regulatory tools to achieve particular service delivery outcomes, prior to the price reset which will apply in the 2005 to 2010 regulatory period.

D.6.2. Minimum Standards In South Australia

The current minimum standards relate to:

- time to respond to telephone calls and written enquiries, and to provide written explanations for interruptions to supply;
- time by which a distributor is required to restore supply to customers;
- reliability of supply; and
- quality of supply.

The first three categories are "best endeavours" – ie the standard requires that ETSA uses its best endeavours to achieve the specified target, and is not as onerous as an absolute obligation.

D.6.3. Performance Incentive Scheme

The Distribution Code establishes a symmetric performance incentive scheme.[33] It enables the maximum average distribution revenue earned by ETSA to be increased or decreased depending on actual performance.

---

[33] Mechanisms can be either symmetric or asymmetric. With symmetric schemes, both rewards and penalties are possible, in contrast to asymmetric schemes where only penalties are possible. Ideally, the customer should drive the choice between asymmetric and symmetric schemes, based on the following criteria:

- If it is considered that customer value improvements in quality approximately the same as reductions in quality, then a symmetrical incentive scheme may be appropriate; and
- If there is a reason to believe that customers place less value on improvements in reliability than in reductions, then an asymmetric scheme may be used.

D.6.4. Guaranteed Service Levels

Minimum standards and incentive schemes are based around average performance for a group of customers. Under some circumstances it may be appropriate to supplement these approaches with a scheme of payments to individual customers for whom certain guaranteed service levels (GSLs) are not met. These might be equal to the minimum standard. GSLS have been specified in the Distribution Code in relation to the timeliness of certain responses by ETSA:

- timeliness of appointments – no more than 15 mins late, penalty of $20;
- promptness of new connection – within 6 business days, penalty of $50 per day, max $250; and
- timeliness of street light repairs:
  - Metro – within 5 business days, penalty of $20 per 5 day period; and
  - Country – within 10 business days, penalty of $20 per 10 day period.

The current measures relate to customer service rather than reliability or quality of supply.

D.6.4.1 Measures of Reliability of Supply

The SA arrangements adopt the almost universal measure of reliability, that is the average loss of supply (in minutes) per customer over a year, or SAIDI (System Average Interruption Duration Index). SAIDI – SAIFI x CAIDI, where:

- SAIFI (System Average Interruption Frequency Index) is the average number of interruptions to supply per customer over a year; and
- CAIDI (Customer Average Interruption Duration Index) is the average duration of each supply interruption within a particular year.

SAIDI may not be the best measure of reliability for the purposes of creating financial incentives for performance because it is a measure of the per customer loss of supply, which implies that the distributor receives extra revenue by reducing minutes lost per customer. However, the total value of electricity supply is normally considered to be related to the energy supplied – which implies that larger customers should receive a higher weight in the reliability indicator than small customers.

D.6.5. Momentary Interruption

Momentary interruptions (interruptions of less than 30 seconds) are currently excluded from the financial incentives in South Australia. While momentary interruptions appear less of a concern than sustained interruptions, they do create some loss of value. They can trip

sensitive equipment resulting in many hours of off time. In addition, while many of the actions taken to reduce sustained interruptions will also reduce momentary interruption, it is possible for a distributor to take actions that lead to a substitution of momentary for sustained interruptions. Therefore, failing to provide a signal of this loss of value to the distributors may lead to it preferring actions that lead to a substitution of longer interruptions for momentary interruptions, which in turn may make customers worse off.

D.6.6. Planned/Unplanned Outages

The report makes the comment that it is widely considered that customers suffer a smaller loss when they have prior warning of an outage, but clearly they do suffer some loss. Signalling this loss of value to the distributor may provide it with an additional source of pressure to improve maintenance practices. In South Australia the penalty or reward for planned outages is the same as for unplanned outages.

D.6.7. Measures of Quality of Supply

Power quality variations include:

- excessive variations in the range of the supply voltage;
- rapid variations in supply voltage;
- switching transients – short-term distortions to the voltage waveform which can result in severe over-voltage;
- voltage dips;
- voltage unbalance; and
- harmonics – voltages or currents with frequencies that are integer multiples of the frequency at which the supply system is designed to operate.

The SAIIR notes in its report that it is not aware of any performance incentive schemes that consider power quality.

D.6.8. Measures of Customer Service

The Distribution Code currently identifies the following customer service standards:

- time to respond to telephone calls – 85 percent within 30 seconds;
- time to respond to written enquires – 95 percent within 5 business days; and
- time to provide written explanation for interruptions to supply – 85 percent within 20 business days.

D.6.9. Customer Valuation

SAIIR conducted a literature review of past customer valuation studies. Results of these studies indicate that there may be differences in the relationship between price, revenue and service level due to:

- the type of customer and associated usage pattern of the electricity;
- the existing level of service received by a customer, often related to geographic location within a jurisdiction; and
- outage type in terms of whether it is planned or unplanned and its duration and the frequency of outages.

D.6.9.1. Customer type

Monash University undertook a study for the former Victorian Power Exchange in 1997, and considered five customer groups:

- Residential users;
- Commercial users;
- Agricultural users;
- Industrial users; and
- Major users.

These groups placed significantly different values on the same level of reliability. The difference in values was driven by the usage of electricity and the significantly different costs incurred when an outage occurs.

D.6.9.2. Existing level of service

The existing level of service received by customers, impacts on the demand for changes in service levels. Those customers who currently enjoy high levels of service are likely to place lower values on marginal service improvements than those who experience lower levels of service.

D.6.9.3. Outage type

The time of day and day of the week that an interruption occurs will influence the extent of its impact.

D.6.9.4. Survey Results in Other Jurisdictions

Consumers are willing to pay for improvements in reliability, but the benefits and costs of improvements in reliability must be demonstrated. The SAIIR recently commissioned a survey of the following valuation studies:

- a Canadian customer survey to estimate the impact of power interruptions on customer, conducted by the Power System Research Group;
- a UK survey of domestic and business customers, conducted by BMR for Norweb Distribution during February to July 1998;
- a customer survey on interruptions and attitudes to a range of changes to Guaranteed Standards of Service in Great Britain. The survey was conducted by MORI on behalf of the Office of the Electricity Regulator, during the period February to March 1999;
- a customer research project by KBA Consulting Group Pty Ltd and Powercor on Victorian residential, farm and small business consumers in March to April 1999; and
- a customer survey conducted by CitiPower and NTF, focusing on price/service trade-offs in 1999.

There are other factors which contributed to consumer views that cannot be readily separated from reliability issues. In particular, the starting point for quality will affect the results of service quality surveys.

There does not appear to be a great deal of consistency across surveys in the value that customers place on service levels.

Customer surveys undertaken by the Victorian electricity distributors found:

- no clear indication of the customer preferences with respect to outage duration or frequency of outages;
- momentary interruptions were of less consequence than sustained interruptions, although certain customer groups were more adversely affected by momentary interruptions;
- planned outages were more acceptable than unplanned outages; and
- customer preferences in relation to frequency and duration may be difficult to quantify because they change with outage duration.

D.7. United Energy, Submission to the Office of the Regulator General on Customer Value, April 2000

D.7.1. Objective

As part of the Office of the Regulator General's 2001 Distribution Price Review (now the Essential Services Commission), United Energy Limited commissioned a survey to determine their customers' willingness to pay for service quality.[34] They engaged market research firm Newton Wayman Chong and Associates to conduct the survey.

D.7.2. Methodology

Newton Wayman Chong interviewed 1,103 residential customers. Potential respondents were asked basic profiling questions to ensure that the final sample was representative of United Energy's customers. Customers were asked to express their preferences for three service level options, effectively trading-off higher service against higher prices.

D.7.3. Outcome

Responses suggest that customers were willing to pay an additional price for higher service. A $30 reduction in prices did not significantly change customers' preference for service improvements.

[34] United Energy, ***Submission to the Office of the Regulator-General,*** 20 April 2000

APPENDIX E. PHASE ONE: ELECTRICITY STAKEHOLDER CONSULTATION

E.1. Summary of Possible Electricity Attributes

The following attributes were identified as part of our discussions with ActewAGL and other stakeholders for electricity:

- number of outages;
- average ***unplanned*** outage duration;
- average ***planned*** outage duration;
- information provided when supply is disrupted unexpectedly:
  - 24 hour, operator manned call centre;
  - Recorded message at a designated call centre number; and
  - Customers have own designated emergency telephone number to call;
- prior notification of a planned interruption;
- time to answer the telephone;
- width of appointment windows;
- keeping appointments;
- meter reading cycle (annual, quarterly, monthly); and
- time to connect a new customer.

In addition, the following concepts and/or new 'services' were identified during discussions as topics for exploration in the focus groups:

- are customers sensitive to the timing of outages? Would customers like to be given a choice as to the timing of planned outages?
- would the provision of back-up supply during planned outages be of interest to small commercial customers?
- is total outage time per annum relevant to a customer? Or is frequency and duration per outage more important?
- are customers conscious of voltage fluctuations (dimming lights, PC interruptions, reduced light bulb life)?

- what are customers' views on the existing tree trimming requirements? Would customers be interested in a more relaxed 'tree trimming policy' – which could be achieved via the installation of aerial bundled cable (ABC)?
- what are customers' views on the visual amenity aspects of undergrounding?
- are customers interested in interval metering – ie, would customers like to know more about their hourly consumption and the hourly cost of energy?
- are customers willing/able to participate in demand management programs – on line control of appliances, load shifting programs, energy efficiency advice?
- are customers aware of the 'green choice' tariff?
- do customers perceive a difference between the distribution and retail business?

E.2. Discussion with ActewAGL

A meeting with ActewAGL representatives to discuss attributes of the electricity service was held between 2 and 4pm on 15 November 2002. It was held in the Conference Room at ActewAGL's offices at Greenway, Canberra.

ActewAGL representatives participating in the discussion were:

- Fraser Argue
- Rob Baker
- David Howe
- Graeme Negri
- Jeff Aspey
- Robyn Howard
- Ken Butcher
- Geoff Astbury
- Mick Charlton

Project team representatives were:

- Greg Houston, NERA
- Nina Shore, NERA
- Anna Corluka, ACNielsen

David Graham, David Skillman and Leigh Harkness, from ActewAGL, also attended the session as observers.

E.2.1. Issues discussed

After a brief introduction and summary of the study's objectives by the project team, participants discussed the following aspects of the electricity service:

E.2.2. Reliability

The electricity network is designed (and maintained) according to the needs of residential customers – given that they make up the majority of customers (125,000 out of 138,000 customers).

Duration of an outage is relatively more important to customers, compared to the number of outages experienced (within limits). Time of outage is also likely to be important, eg, commercial customers will be less/not affected if outages occur outside of business hours.

Managing customers' expectations is an integral part of the service – customers like to be kept informed as to the likely duration of an outage. Customers also value ActewAGL committing to what is promised (eg, if ActewAGL advises that the power supply will be out of 2 hours then they would like the power to be out for 2 hours – not 1 hour and not 3 hours).

Some customers have sought a 'gold phone' service – which would involve their own dedicated line to seek and/or retrieve information on network disruptions. ActewAGL has not provided such a service to date.

Currently ActewAGL provides a 24-hour phone service for emergencies and service disruptions. When an interruption occurs, a pre-recorded message outlining the problem and the expected outage time is made available through this number.

ANU is a customer that is sensitive to outages (due to its research program), and it has sophisticated arrangements to deal with outages.

PC users (of which there are many in the ACT) are likely to have high reliability needs.

E.2.2.1. Unplanned outages

Unplanned outages most often occur as a result of storms, by third party activities (digging, etc), vehicle accidents/incidents, or falling/interference by trees. Around 50 percent of outages are unplanned.

Broadly half of ActewAGL's network is underground (predominantly in new areas). The older areas could be re-configured underground – however this would be at high cost

(around $9,000 a block). Workshop participants considered that the primary benefit of an 'underground network' is visual amenity – which is less critical than other aspects of the electricity service. The participants therefore suggested that undergrounding was less relevant for the study.

An alternative to undergrounding would be re-wiring the existing, above ground network with aerial bundled cable (ABC). This would reduce the number of outages caused by trees, and would reduce the extent to which residents must trim their trees.

Tree trimming is a major cause of customer complaints – particularly in the older, well established areas of Canberra. Customers are fined for not complying with clearance requirements between tree foliage and electricity lines.

Vehicles driving over service boxes (located on nature strips/ street corners) are a common cause of unplanned outages.

Vehicles colliding with electricity poles are not really an issue in the ACT (compared to Sydney), given that the majority of electricity poles are located in residents' backyards.

There have been a high number of outages in certain areas recently (in Yarralumla and Charnwood, for example, where 9 or 10 outages have occurred in the past 4 months). ActewAGL has had a number of complaints from these areas, and workshop participants considered this outage level to be within a customer's upper limit of acceptability.

The workshop participants considered that residential customers would expect 1 outage per year (as a minimum). The statutory target is no more than 1.2 outages per customer per annum. The existing level of service is about 1.1 outages per customer per year.

Average duration of unplanned outages is currently around 40-50 minutes (this is an internal and statutory benchmark). The minimum outage can be a couple of seconds, and the maximum is around 7 hours. An outage of less than a minute is not recorded as an outage – it is a 'momentary interruption'.

ActewAGL currently receives around 10 or 15 claims for damage every month. Some of these relate to appliance damage – which are caused by brown outs, or voltage spikes.

E.2.2.2. Planned Outages

The upper limit for the duration of planned outages is 5 hours. Typically, a household will have one five-hour planned outage every 5 years.

The minimum number of planned outages is affected by:

- pole renewal, which is done every 5 years; and

- tree review, which is done every 3 years.

The duration of planned outages is dependent on maintenance time, for example:

- it takes 5 hours to conduct maintenance of an electricity pole; and
- a tree trimming exercise requires 1.5 hours.

There is scope to structure maintenance work so as to limit the number of planned outage. 'Live wire' tree trimming is one example. Ten out of 50 linesmen are trained for such work.

ActewAGL is currently working toward improving the co-ordination between tree-trimming and network maintenance – which is likely to reduce the number of planned outages.

An increased outage time for planned maintenance would be of value to ActewAGL.

Customers are likely to be particularly sensitive to the ***timing*** of planned outages. For example, a number of residents will be indifferent to outages that occur in the middle of a working day – as they will be unaffected (they are at work).

ActewAGL can provide a back-up supply for outages. For example, on a number of occasions ActewAGL has provided/leased small generators to maintain/protect IT services for a home office during a planned outage. These portable generators are about $200 to buy.

Customers, as a general rule, do not have pre-arranged, contingency plans in place. ANU is one exception.

E.2.3. Notification of a planned interruption

Customers must be notified at least seven days in advance of a planned interruption if ActewAGL requires access to a customer's property. Otherwise at least 2 days notice is required for a planned interruption.

ActewAGL's notification process has been disrupted in the past few months (due to database difficulties, which have now been rectified).

A reduced notification period would be advantageous to ActewAGL's maintenance team. This would add to the flexibility of the maintenance team during certain weather conditions, etc.

E.2.4. Voltage

ActewAGL does not currently measure fluctuations in voltage.

Dimming lights or having to re-boot a computer are the most common effects of voltage fluctuations (as experienced by a customer). Only isolated areas are affected by voltage fluctuations however – such as Red Hill. Customers do complain about these effects from time to time. The War Memorial is one customer in the ACT that is particularly sensitive to fluctuations in voltage.

Workshop participants considered that voltage fluctuations were a less important aspect of the service for the purposes of the study.

E.2.5. Connection times

Generally, ActewAGL connects residential customers on the same day that connection is requested (for existing premises). New residential premises are connected within 3 days, and commercial premises are connected within 15 days.

E.2.6. Appointments

Appointments are made for the following reasons:

- reconnection, for which customers have a two-hour appointment window; and
- service upgrade, eg, an upgrade to three phase power.

Eight appointment 'windows' are currently available to developers / builders.

E.2.7. Streetlighting

ActewAGL holds a contract with Department of Urban Services (DUS) for the maintenance of streetlights. Workshop participants considered that streelighting maintenance was not relevant for the study.

E.2.8. Energy Efficiency

A winter peak drives network augmentation, while the network tends to be under-utilised in summer. In some areas, the existing network is under-utilised all year round.

Energy efficiency was considered to be too difficult to target to specific areas of the ACT, and therefore, was seen to be less relevant for the study.

E.2.9. Metering

Interval metering was raised as a possible 'new product' and / or attribute of the service.

E.2.10. Pricing

Participants suggested that customers' sensitivity to the fixed and variable components of the electricity tariff should be explored.

E.3. Discussion with ICRC

On 18 November the project team met with the staff at the ICRC. The ICRC raised the following issues as potential topics for the study, in relation to ***electricity***:

- customers' willingness to pay to protect the environment;
- customers' willingness to pay for existing service standards;
- customers' willingness to pay for interval metering;
- the ability of customers to manage their demand;
- do customers perceive a difference between the network and the retail business;
- customers' perceptions on the electricity distribution service's value for money;
- customers' views on the minimum standards in the Consumer Protection Code;
- customers' views on whether gas is a substitute for electricity; and
- customers' views on the 'green choice' energy tariff.

APPENDIX F. PHASE ONE: EXISTING STANDARDS IN THE ACT FOR WATER AND WASTEWATER SERVICES

The ***Utilities Act 2000*** is the primary instrument governing service standards in the ACT. It applies to all utilities providing gas distribution and retail, electricity distribution and retail, water, and sewerage services in the ACT. The ***Utilities Act*** requires all utilities operating in the ACT to adhere to a range of customer service standards, and gives force to a number of industry codes of practice. These codes include:

- the Consumer Protection Code, which covers all of the gas retail, electricity distribution and retail, water, and wastewater services. The service standards specified in the Code are orientated to 'customer service' type standards such as response times to queries and complaints;
- the Water Supply and Sewerage Services Standards Code, which prescribes minimum standards for utilities to abide by when supplying water and sewage services; and
- the Drinking Water Quality Code of Practice, which provides a framework for reporting on drinking water quality.

The ***Utilities Act*** also outlines a number of rights and obligations regarding a utility's network operations. These include the right for a utility to make repairs to its network on private land, the right of the landowner to receive notification of such repairs and the requirement for the utility to minimise any damage to the property.

The specific provisions in the ***Utilities Act*** and the industry codes, as they relate to water and wastewater, are outlined below.

F.1. General Legislated Service Standards

As noted above, a utility is required to meet a number of performance and service standards for each of its services, as outlined in the ***Utilities Act*** and Consumer Protection Code. A utility is exempt from these standards under subclause 10.1 to the extent that alternative arrangements have been agreed between the utility and the customer, and/or "events and conditions, outside of the control of the utility, including emergencies declared under the ***Emergency Management Act 1999***, prevent the utility from complying with the performance standard".

F.1.1. Utilities Act[35]

Division 7.3 of the ***Utilities Act*** requires a utility to meet and report on a number of standards for each utility service, including the requirement to:

- connect or vary connections when requested;
- limit damage etc to landholders' property;
- provide notice to landholders when undertaking network operations;
- provide notice to any other affected utility when undertaking network operations;
- restore landholders' property after undertaking network operations; and
- ensure all authorised persons are issued with identity cards and receive any necessary training.

In 2001/02, ACTEW/ActewAGL received the following complaints from customers in regard to the standards required by ***Utilities Act*** for the water and wastewater service:[36]

- 39 complaints were received about inconvenience, detriment or damage to landholders' property resulting from network operations;
- three complaints were made regarding lack of, or insufficient notice given to landholders before commencing network operations or tree;
- 142 complaints were received about their failure to remove all property and waste; and
- a small number of requests for connection were refused. In these instances, the block was not located within a 'practicable' distance of the network.

F.2. Customer Service

F.2.1. Consumer Protection Code[37]

The standards set out in the Consumer Protection Code are designed to ensure that utilities provide a "satisfactory level of customer service, while continuing to meet pricing regulations". The following standards are required by the Code:

---

35 A copy of the ***Utilities Act 2000*** is available at http://www.icrc.act.gov.au/WhatsNew/index.html.

36 ActewAGL, ***Water Supply and Sewerage – Report to ICRC***, 2002.

37 A copy of the Consumer Protection Code 2000 is available on the above website.

- ***consumer connection times:*** a customer must be connected on the same day as a request is made, or by close of business the following day if the request is made after 2pm. A $60 penalty applies for each day the customer remains unconnected;

- ***keeping agreed appointments:*** the utility must not arrive more than 30 minutes late for an appointment unless a minimum of 1 hour's notice has been given. A minimum of 24 hours notice is required if an appointment is to be cancelled. A penalty of $20 applies if this standard is not met;

- ***responding to written customer account queries:*** the utility must acknowledge a customer query within 10 business days and respond within 20 business days or pay a $20 penalty;

- ***responding to written customer complaints:*** if the complaint requires a visit to the customer's premises it must be acknowledged within 10 working days and responded to within 20 working days. In all other cases a response is required within 10 business days. The penalty for non-compliance is $20;

- ***response time to customer notification of problem or concern:*** if the notification relates to damage to the network which has the potential to affect public health or safety, a response is required within 6 hours. All other concerns must be investigated within 48 hours. If these standards are not met, a utility must pay each affected customer a $60 rebate;

- ***planned interruptions to utility services:*** at least 2 days notice of a planned interruption must be given to all customers. The supply must be reinstated as soon as possible and within 12 hours. A $50 penalty to all affected customers applies if the utility fails to meet this standard; and

- ***unplanned interruptions to utility services:*** a 24 hour telephone service must be established within 12 hour of being advised of an interruption, subject to a $20 penalty. Supply must be reconnected as "soon as possible".

In 2001/02, ACTEW/ActewAGL received 48 complaints about lack of or insufficient notice of planned outages, and paid four rebates for failure to give notice of a planned outage of $50 each. All other standards were met by ACTEW/ActewAGL with respect to the water/wastewater service.[38]

In addition to those customer service standards specified above, with respect to the water service, the Customer Protection Code also requires ACTEW/ActewAGL:

- to respond to customers' water quality complaints within 4 hours in an average of 95 percent of cases; and

[38] ActewAGL, ***Water Supply and Sewerage – Report to ICRC***, 2002.

- if the complaint cannot be remedied within 24 hours, to advise the customer in writing and within 5 business days of the complaint being received, of the known cause of the problem and what is being done to rectify it.

In 2001/2002 ACTEW/ActewAGL received 49 notifications of network problems. It failed to meet the above standard in 2.04 percent of cases (ie, in one instance).

F.2.2. ACTEW/ActewAGL's own internal 'customer service' measures

In addition to the legislated requirements, ACTEW/ActewAGL has an internal target of answering 90 percent of calls within 20 seconds, and abandoning less than 2 percent of calls.[39]

F.3. Reliability Standards

In relation to the water service the Consumer Protection Code requires that:

- a customer must not be without drinking water for more than 12 hours. A customer is entitled to a $50 rebate for each subsequent 12 hour period without water. In addition, a Water Utility must make emergency supplies of drinking water of reasonable quantity and quality available to a customer if the customer has been without drinking water for more than 12 hours;
- planned interruptions to water supply should not exceed 25 hours in total per annum; and
- a burst pipe should be attended to within 3 hours if the burst or leak is causing damage or harm to customers, property, or the environment, or within 24 hours where the burst or leak is not having an impact on customers, property or the environment.

ACTEW/ActewAGL generally complied with these standards in 2001/02.

F.3.1. ACTEW/ActewAGL's own internal measures of reliability

In addition to the legislated requirements, ACTEW/ActewAGL also has several of its own internal measures of network reliability:

- water main bursts should be attended to within 5 hours in 95 percent of cases;[40] and
- there should be no more than 8 interruptions to water supplies per 100 properties.[41]

---

[39] ActewAGL ***Annual Report, 2001-2002***, page 23. A copy can be found at http://www.actewagl.com.au/publications

[40] ActewAGL, ***Water and Wastewater Network***, October 2002.

ACTEW/ActewAGL has achieved both of these targets in recent years. In the period 2000/01, 97.5 percent of interruptions were restored within 5 hours, increasing to 98.6 percent in 2001/02. With respect to the second target, 2.14 and 1.77 interruptions per hundred properties occurred in 2000/01 and 2001/02 respectively.

F.4. Quality of Supply

The Water Supply and Sewerage Service Standards Code requires a water utility to:

- maintain a pressure of not less than 10 meters (100kPa) static head at the highest ground level point on the premises;
- maintain a pressure of not more than 120 meters static head. Pressures are to be measured at the water meter or at the first tap after the meter in no flow conditions;
- where a water utility restricts the supply of water to a customer's premises, the flow rate must not be less than 2 litres per minute. The flow is to be measured at the tap nearest the meter;
- ensure that water supply from the water network is available 24 hours a day, every day of the year, subject to any disconnections of services, interruptions to supply, or restrictions to supply; and
- operational rates as follows:[42]

	Diameter of the property service pipe (mm)	Minimum flow rate in litres per minute
20		20
25		35
32		60
40		90
50		160

In 2001/02, ACTEW/ActewAGL generally achieved these targets.

[41] ActewAGL, ***Annual Report***, 2001-2002.

[42] Water Supply and Sewerage Services Standards Code.

F.5. Drinking Water Quality

Drinking water quality standards are established in the Drinking Water Quality Code of Practice.[43] While the Code makes reference to the Australian Drinking Water Guidelines, it establishes standards specifically catered to the needs of the ACT community.

The Code requires ACTEW/ActewAGL to produce and make public annual reports on drinking water quality monitoring programs, including a number of specific characteristics and the sampling locations. These results must be compared with the Drinking Water Quality Code of Practice and the Australian Drinking Water Guidelines.

The required parameters and targets are as follows (as set out in the Drinking Water Quality Code of Practice):[44]

Parameter	Target/units
PH	pH units
Alkalinity	Mg/L as CaCO3
Hardness	<200 as CaCO3
Turbidity	<5 NTU
Colour	<15 Pt-Co
Free Chlorine	<5 mg/L
Fluoride	<1.2 mg/L
THMs	<250 ug/L
Aluminium	<0.2 mg/L
Iron	<0.3 mg/L
Manganese	<0.1 mg/L
Copper	<2 mg/L
Lead	<0.01 mg/L
Total Coliforms	0 CFU/100mL in 95 percent of samples
Thermotolerant Coliforms	0 CFU/100mL in 98 percent of samples

Under the Drinking Water Quality Code of Practice, ACTEW/ActewAGL is also required to report a number of incidents to the Chief Health Officer within 24 hours. These incidents include high levels of cryptosporidium, health related chemicals, pesticides and thermotolerant coliforms.

---

[43] At the time of writing the Drinking Water Quality Code of Practice was available at: http://www.health.act.gov.au/publications/drinkingwatercode/drinkingwatercode.pdf.

[44] ActewAGL, ***Annual Drinking Water Quality Report***, 2001-2002.

ACTEW/ActewAGL has achieved its targets for all health indicators and aesthetic indicators under the Australian Drinking Water Guidelines for the year ending August 2002.[45]

F.6. Environmental Standards

ACTEW and ActewAGL are required to comply with a number of state, national, and international standards, including the ***ACT Environmental Protection Act 1997***, ***ISO 9002*** and ***ISO 14001***:

- The ***ACT Environmental Protection Act 1997*** legislates a requirement for everyone living in the ACT to look after the environment by minimising the damage they inflict on the environment. Companies such as ActewAGL and ACTEW are required to report any harm they cause the environment through their activities;
- The ISO 9000 series is a set of standards for managing quality. It consists of a framework for ensuring a company produces a high quality product and includes a process for continually monitoring and improving quality;[46] and
- ISO 14001 was first published in 1996, and details the requirements for an 'environmental management system' – that is, a framework for reviewing and improving environmental performance. It applies to those environmental aspects over which the organisation has control, and can be expected to have an influence on environmental degradation.[47]

In addition to these general environmental regulations, ACTEW/ActewAGL must also comply with the ***ACT Water Resources Act 1998.*** This provides for the management and protection of the ACT's water resource to ensure enough water will be available for generations to come. The Act also provides for the protection of the environment, including minimising damage to waterways and ecosystems that rely on water.

ACTEW and ActewAGL must also operate within the framework of 'ecologically sustainable development'.

---

[45] ActewAGL, ***Canberra Drinking Water Quality***, August 2002.

[46] A copy of the ISO 9000 series can be found at: http://www.iso.ch/iso/en/iso9000-14000/iso9000/iso9000index.html

[47] A copy of the ISO 14001 standard can be found at: http://www.iso14000-iso14001-environmental-management.com/iso14001.htm.

APPENDIX G. PHASE ONE: A SURVEY OF WATER AND WASTEWATER STUDIES

G.1. Summary of Topics Typically Adopted in Other Studies/Research

The types of product attributes typically adopted in other stated preference studies for water / wastewater, include:

- frequency and duration of service interruptions;
- notification timing and method prior to a planned interruption;
- making and keeping appointments with customers;
- time taken to answer the telephone at the customer call centre;
- handling of written customer queries, including response times;
- meter reading frequency;
- time taken to connect new customers;
- response time to burst pipes and other emergencies;
- quality of drinking water, including taste, smell, appearance, safety, and lead levels;
- water pressure at customers' premises;
- smells from sewage treatment plants;
- the risk of homes / gardens being flooded with sewerage;
- quality of river waters;
- protection of wildlife and plants;
- security of supply, and probability of water restrictions.

G.2. Attitudes to Water Service, UK, OFWAT et al, 2002[48]

In 2004 Ofwat will reset price limits for the water and sewerage companies in England and Wales for the period 2005-2010. A survey was conducted as a joint initiative between major stakeholders in the water and sewerage industry to provide input into this review. The research aimed to provide a better understanding of customers' views of the water industry and to determine their priorities for the scope and pace of improvements to the water environment, drinking water quality, sewerage services and customer services.

[48] MORI, ***The 2004 Periodic Review: Research into Customers' Views,*** August 2002.

G.2.1. Methodology

The research used both qualitative and quantitative analysis. The qualitative research consisted of focus group interviews. The aim of the focus group research was to better understand the answers of respondents, test their comprehension and interpretation of concepts, and test their ability to cope with possibly complex questions.

Information from the focus groups was used to inform the wording and design of the main questionnaire for the quantitative analysis. Focus groups were also used to gather the feedback on issues that were felt to be too complex to be answered in questionnaire format. Respondents answered the questionnaire during a face-to-face interview. The interview was conducted face to face in the respondent's own home, using paper questionnaires and show cards. The questionnaire consisted on general demographic questions, customer specific questions and a number of ranking and rating exercises.

A stratified random sample was used to achieve a sample demographically representative of England and Wales. A total of 230 districts (comprising on average 150 households) with 50 or more addresses were randomly selected. The probability of selection in each district was proportional to the population size. Quotas were set to reflect the socio-demographic profile of the district. The quotas were set on a range of socio-demographic variables – age, gender, working and whether or not the household was charged for water by meter. Interviewers went to each district to obtain a specific number of interviews with respondents fulfilling the preset quotas. A total of 2,076 interviews were made.

Respondents for both the focus groups and the interviews were made up of a combination of bill paying customers or their spouse/partner, small businesses, non-bill payers with an interest in water quality, water and sewerage services and the water environment generally – the responses of bill payers was analysed separately from non-bill payers when examining willingness to pay.

G.2.2. Results

Attributes of water and sewerage supply were examined in four sections:

- background and context;
- environmental priorities;
- perceptions of the current levels of water and sewerage services and the need for improvement; and
- the view of small businesses.

G.2.2.1. Background and Context

G.2.2.1.1. Satisfaction with Water Supply and Sewerage Services

The majority of respondents were satisfied with their tap water supply service, and with their sewerage services. There was some variation in satisfaction between different regions.

G.2.2.1.2. Factors Influencing Satisfaction Levels

Correlation analysis was performed with other responses to determine which aspects of service are the most influential in determining overall satisfaction. Correlation analysis was performed on the following factors:

- taste and smell of tap water;
- maintaining safety of tap water;
- appearance of tap water;
- maintaining water and sewerage infrastructure;
- pressure of water in your taps;
- handling customers' queries;
- smells from sewage works;
- reliable and continuous water supply;
- preventing bursts and leaks;
- avoid risk of homes / gardens being flooded with sewerage;
- maintaining quality of river waters;
- protecting important areas of wildlife and plants;
- maintaining quality of coastal / bathing waters; and
- reducing hose-pipe bans.

Respondents were asked to rate the above factors in terms of which they feel are in the most urgent need of improvement, and also in terms of how important money spent on each factor is. There was a weak relationship between satisfaction and taste and smell, maintaining tap water safety and appearance, maintaining infrastructure and water pressure. It was notable that environmental aspects were not among the main drivers of overall satisfaction. This suggests that the state of the environment does not spring to mind when rating overall service levels. This is emphasised by the rating given for current service levels (see discussion further below). The quality of coastal and bathing waters were rated as having the worst current level of service, yet did not appear to influence overall satisfaction. Respondents also felt that it was worth paying more for improvements protecting the environment – maintaining river water quality, maintaining the quality of

coastal and bathing waters, and protecting important areas of wildlife and plants were the top three services that respondents felt were worth paying more for (see discussion further below).

G.2.2.1.3. Value for Money

Most respondents were satisfied with the value for money of water supply – although again, this varied by region. Respondents with lower bills had a greater correlation with higher levels of satisfaction. Those who feel that they are receiving value for money are more likely to be willing to pay more for service improvements. Those on low incomes or with high bills were less likely to feel that water supply represented good value for money.

As with overall levels of satisfaction, correlation analysis was undertaken to determine the drivers of value for money. There were relatively weak relationships found with maintaining the safety of tap water, its taste and smell, and maintaining the infrastructure and appearance.

G.2.2.2. Amount Currently Billed

There is a relationship between the amount respondents' think they pay, and the satisfaction rating reported – the more they think they pay, the lower the satisfaction levels. The size of the annual water bill also affects the amount that respondents are willing to pay for improvements – the more they pay, the less they are willing to pay for improvements.

G.2.2.3. Paying by Meter

Less than 20 percent of respondents had metered water. Those that were on metered water were less likely to feel that improvements are needed or that they are worth paying for (this does not include environmental aspects).

G.2.2.4. Use of Water in the Home

The majority of respondents will drink tap water (either on its own, or mixed with other drinks), although 61 percent use bottled water, a purifier or boil water.

G.2.2.5. Contact with Water Services Supplier

Only 20 percent of respondents have contacted their supplier in the last two years. The level of contact is higher with those who are metered and with those that are dissatisfied with service levels. The majority of respondents were satisfied at the way the matter was handled.

G.2.2.6. Use Made of the Water Environment

The majority make use of the water environment. The results of the focus groups showed that few could see any responsibilities on the part of the consumer or water user to the state of the water environment.

G.2.2.7. Attitudes Towards the Water Environment

Almost all respondents agree that industries creating water-polluting waste should pay to protect the environment. The majority of respondents agreed that consumers should use water more wisely in order to conserve supplies and maintain the water environment. The majority also thought that the cost of protecting the water environment should be met by all that benefit – not just those paying water and sewerage bills. Those making use of the water environment are no more likely to agree or disagree with this than other respondents. Focus group discussions indicated that this issue was taken for granted – it was not spontaneously raised as an issue or concern. However, when the respondents' focus was directed to it, they valued the water environment highly and felt is should be improved, or at least not allowed to deteriorate.

G.2.2.8. Attitudes Towards the Water Industry

Many respondents felt that the water companies are more interested in making money than providing a good service to customers. Respondents were undecided over whether privatisation good or bad, although respondents with lower bills tended to be more positive about privatisation.

G.2.2.9. Environmental Priorities

G.2.2.9.1. Quality of Life Issues Most in Need of Urgent Attention and Improvement

Respondents were asked to rate two or three issues most in need of urgent attention and improvement out of a list of issues. These issues (listed in the order of importance determined by respondents) are as follows:

- crime prevention/law and order;
- health services;
- litter and disposing of waste
- transport;
- education;
- environment;
- water and sewerage services; and

- none of these.

The majority of respondents were most concerned with crime and law and order and health services. Only 6 percent thought water and sewerage services were in the most need of urgent attention. However, this question gave no indication as to the degree of urgency respondents placed on each issue.

G.2.2.9.2. Most Urgent Environmental Issues

Respondents were the most concerned with litter and household waste, followed by the water environment.

G.2.2.9.3. Most Urgent Water Environment Issues

Respondents were told to choose one or two of the following six aspects of the water environment (listed in the order of importance as determined by respondents):

- avoiding damage by pollution to areas of wildlife and plants;
- homes and gardens being flooded with sewerage;
- quality of coastal and bathing waters;
- taking too much water from rivers/streams and wetlands;
- quality of river water.

The majority of respondents felt that avoiding damage by pollution to areas of wildlife and plants, followed by homes and gardens being flooded with sewerage were in the most urgent need of attention. Again, the degree of urgency was not determined. Flood control was not mentioned spontaneously as a widespread and urgent issue in focus groups, but when raised, was felt by respondents to be serious.

G.2.2.10. Perceptions of the Current Levels of Water and Sewerage Services and the Need for Improvement

Respondents were asked to rate the following attributes according to the current levels of service, the service aspects most in need of improvement, the most urgent improvements, service aspects worth paying more for improvements, the degree of concern if urgent improvements were delayed and the amount willing to be paid to achieve improvements:

- appearance of tap water;
- taste and smell of tap water;
- maintaining the safety of tap water;

- pressure of water in your taps;
- reliable and continuous water supply;
- reducing hose-pipe bans;
- preventing bursts and leaks;
- maintaining water and sewerage pipes, treatment works and reservoirs;
- smells from sewage works;
- avoiding the risk of homes and gardens being flooded with sewage;
- protecting important areas of wildlife and plants (low river levels and sewage pollution);
- maintaining the quality of coastal and bathing waters;
- maintaining the quality of river waters; and
- handling customers' accounts, queries, complaints and those with special needs.

G.2.2.11. Rating of Current Levels of Service

Respondents rated the reliable and continuous water supply as having the best level of service. The appearance of tap water and maintaining the safety of tap water were also relatively well rated. The least well-rated aspect was the current quality of coastal and bathing waters, although this was still rated positively by half of the respondents. Very few respondents rate any aspect as terrible. The current level of wildlife and plants was rated more highly by those living in rural areas.

G.2.2.12. Service Aspects in Need of Improvement

Respondents who considered the current level of service to be less than excellent were asked to indicate the level of improvement they felt necessary using a six point scale. The quality of coastal and bathing waters, and the quality of river waters were thought to be in need of at least a little improvement by two thirds of respondents. Protecting important areas of wildlife and plants was also thought to be in need of some improvement.

G.2.2.12.1. Most Urgent Improvements

Respondents were asked to rate the two or three areas they felt were in the most urgent need of improvement. The top four areas were: maintaining the quality of coastal and bathing waters, maintaining the quality or river waters, protecting important areas of wildlife and plants and tap water taste and smell. Feedback from the focus groups was such that respondents would ***like*** to see the improvements, rather than ***demand*** that they occur.

G.2.2.12.2. Services Worth Paying More for Improvements

The top three services that respondents felt were worth paying more for are; maintaining river water quality, maintaining the quality of coastal and bathing waters, protecting important areas of wildlife and plants. It should be noted that opinions on the services worth paying for were widely spread, with the top three being selected by 33 percent, 33 percent and 31 percent of respondents respectively. Consumers who are non-bill payers are consistently more likely to be willing to pay more on all aspects of service. Those who were dissatisfied with a service were also willing to pay more.

G.2.2.12.3. Degree of Concern if Urgent Improvements Delayed

Results indicate that 70 percent of respondents would be concerned if their top priority for improvement was delayed to keep bills down. However, results show that in the general social scheme, these water related issues are not seen to be top priority. Focus group evidence suggests that people would not be overly concerned if improvements were delayed, and other issues prioritised.

G.2.2.12.4. Amount Willing to Pay to Achieve Improvements

Respondents were given four different cost scenarios:

- A – not prepared to pay any more – 25 percent
- B – up to 2 pounds a year – 27 percent
- C – up to 5 pounds a year – 31 percent
- D – more than 5 pounds a year – 12 percent

Those on lower incomes, or with higher water bills were less willing to pay for improvements. Bill payers are more likely to choose A. Those dissatisfied with the service are relatively more likely to choose A – this contrasts with their earlier view when they were relatively more supportive of certain aspects of the service being worth paying more for. There is no reason given for this anomaly. The more aware people were of the problems, the more they were willing to pay. This suggests that it may have been helpful to give respondents a snapshot of the environment first to ensure that all respondents were aware of the current environmental state.

There was no reason given for the choice of the scale used to illicit respondents' willingness to pay. It is unclear whether the results would differ if the monetary scale was changed (eg 5 and 10 pounds, rather than 2 and 5 pounds).

Comments made in focus groups should also be noted. The tone of a number of respondents indicates that there is a feeling that paying more would increase the profits of the water companies – ie respondents did not trust that all the money would be spent on

improving service levels. If it was clear that the funding was specifically earmarked, it is possible that respondents may have been willing to pay more.

G.2.3. Views of Small Businesses

Responses differed little to those of other customers. Only one in ten would have changed their response if responding from a personal perspective.

G.2.4. Insights

Surveying respondents by region allows analysis of how service levels differ geographically. The results from this study illustrate that the respondents' location has a marked affect on results. For example, those living in rural areas were happier with the environmental state than those living in urban areas.[49]

The perception that paying more to improve services/the environment would lead to increased profits to shareholders indicates that the willingness to pay question could have been presented differently.

Indications from focus groups are that respondents do not automatically think of everything they feel is important. For example, respondents did not spontaneously indicate that sewerage flooding was an important issue. However when prompted, most respondents felt this was a serious issue.

Aspects considered by respondents when determining their overall satisfaction levels were relatively narrow. They did not consider the environment when thinking about their satisfaction, indicating that they did not automatically consider water and sewerage company services and the impact on the environment. As shown by results later in the survey though, the impact on the environment was considered important.

Results also indicated that those with greater knowledge on the impacts on the environment were willing to pay more. This indicates that if respondents were provided with some information on environmental issues, this may have impacted on their willingness to pay.

The scale used in the survey was not particularly helpful. For example, what one person considers important and very important may be different from another person. It also did not help sort out the relative levels of urgency. The results indicated what respondents considered to be the most urgent, but did not provide any insights into the degree to which respondents felt some aspects were more urgent than other issues.

[49] It may be that there were external factors impacting on rural responses – such as jobs and incomes trading off with the state of the environment.

G.3. Customer's Willingness to Pay for Attributes of the Water Service, Yorkshire Water, UK, 2002[50]

G.3.1. Objectives

The aim of the research study undertaken by Yorkshire Water (YWS) was to estimate the benefit YWS's customers derive from marginal changes to the level of service provided with respect to a range of service factors. The results are to be used to assess the relative costs and benefits of improving particular service levels.

1.2.3 Methodology

Utility and willingness to pay was assessed with respect to 14 service factors:

- security of supply;
- interruptions to supply;
- biological characteristics of drinking water;
- discolouration of drinking water;
- leakage;
- inadequate mains pressure;
- lead in drinking water;
- sewage flooding into properties;
- areas flooded by sewage;
- nuisance from odour and flies from sewage treatment works;
- pollution incidents;
- ecological quality of rivers;
- ability to use inland waters for recreation; and
- bathing beach water quality.

The residential sample covered 1000 households throughout the YWS area. The business sample covered 500 businesses throughout the YWS area.

[50] The discussion below draws on information provided to the project team by Melinda Acutt at Yorkshire Water.

G.3.2. Outcomes

The results of the study are yet to be released publicly by YWS.

G.4. A Study to Assess Environmental Values Associated With Water Supply Options, Centre for International Economics, February 1997

G.4.1. Objective

The ***ACT Future Water Supply Strategy*** put forward by ACTEW in 1994 outlined a number of strategic objectives that would be used to govern the direction of future water supply programs. The objectives were based on three essential elements:

- to base decisions on all the costs of any proposed water supply scheme – including the cost to the natural environment and to the amenities provided by the surrounding environment;
- to reflect the community's values in all supply decisions; and
- to ensure efficient production and delivery of the water supply.

ACTEW believed that the community wanted the approach to water supply to have a minimum impact on the environment and that decisions with regard to water supply in the ACT should involve some community consultation process. This report formed part of that consultation process.

The purpose of the study was to assess the value the community places on different features of options for the future supply of water. To make efficient choices, ACTEW needs to know how the community is willing to make the trade-off between the cost of water and water restrictions and the damage to the environment.

G.4.2. Methodology

Both a contingent valuation (CV) and choice modelling (CM) approach were used to elicit the environmental values associated with water supply options. The contingent valuation study was used to estimate the value placed on the existing environmental damage caused by the current water supply system, whereas the choice modelling analysis was used to estimate the relative values placed on the different features of each water supply option, rather than a set of features that make up one option. The features or attributes of the different options were:

- reduction in use;
- water quality;
- increase in household cost;

- improvements in ACT rivers;
- loss of habitat for uncommon species; and
- appearance of the urban environment.

The choice modelling approach was used to quantify the tradeoffs the community is willing to make between the different features of water supply options. The CM survey was conducted over two weekends as a face to face, or drops off and pick up survey, resulting in 300 useable surveys. Stratified random sampling was used to ensure that a representative sample was surveyed.

The CV study provided valuations on the willingness to pay to improve the environment in the ACT and the willingness to accept restrictions in drought periods to provide more water to rivers and streams in the ACT. The CV survey was sent to 2000 people by mail on 22 November 1996 and was based on random selection from the ACT Telstra directory. Only 785 surveys were returned which represents a response rate of 39 percent.

In general, the CV survey was well received, however, the main issues that came out of the survey were:

- the reversal of order of the restriction and payment questions influenced the responses received. People that answered the willingness to pay question first were less willing to accept restrictions, with 46 percent of this group accepting a 50 percent reduction in outdoor water use in dry periods compared with 58 percent when the restriction question was asked first;
- the order of the questions made no difference to the willingness to pay; and
- there were a number of comments about the payment vehicle for the environmental levy with a few respondents doubting the “once-off” nature of the levy.

G.4.3. Outcome

The main findings of the CV survey were as follows:

- the willingness to pay for environmental work to improve the health of the rivers and streams in the ACT is estimated to be $153 for an average household;
- approximately 50 percent of the respondents were willing to accept restrictions of 50 percent outside water use to supply more water to rivers and streams. The willingness to accept restrictions was lower for respondents who had already been asked if they were willing to pay;
- environmental value stems from the existence or non-use value of the environment;

- the community is very willing to adopt water saving technology, but has some resistance to changes that require alterations in their lifestyle;
- higher income households, better educated households and women were all more willing to pay for a once off environmental levy;
- better educated households and women are more willing to accept restrictions; and
- there is no other relationship between willingness to pay and willingness to accept restrictions.

The main findings of the CM study were:

- there is a positive willingness to use recycled water for outside use and options with this feature were more highly favoured;
- there is a strong negative reaction to using recycled water for drinking purposes. Households are willing to pay considerably more for water to avoid having to drink recycled water;
- restrictions on household use of water are not a desirable feature in a water supply option but this is less important than the annual cost of water to a household;
- the appearance of the urban environment is important with the average household willing to trade-off $16 in household water costs to prevent a major loss of green space in the urban landscape;
- higher income households were more willing to accept a higher cost of water and less willing to accept restrictions. Women placed higher values on river flows and were more willing to reduce use; and
- the most favoured option is one that relies on a voluntary demand management program to reduce per capita consumption by 10 percent. The option that relied on demand management and restrictions on water use was the least favoured given that it could not protect flows in ACT rivers and streams.

G.5. Future Water Supply Directions, ACTEW Corporation, April 1994

G.5.1. Objective

An extrapolation of population and consumption trends would indicate that a new water source would be required by around the year 2004. ACTEW had undertaken preliminary work in identifying the options available to the community and the consequences of those options. In December 1993, the Draft Strategy – "ACT Future Water Supply" was published. The draft includes 131 recommended tasks that must be undertaken to achieve the suggested priorities.

This study was conducted to obtain statistical confirmation of the level of public support for the Draft Water Strategy's principal directions in the following areas:

- education and awareness;
- conservation and efficiencies;
- pricing;
- regulation in drought; and
- alternative water sources.

G.5.2. Methodology

Eight community forums were held at four locations to brief members of the ACT community and to elicit their opinions. Participants were randomly selected by phone across Canberra. The target sample was for a total of 400 attendees. Although 579 recruitment interviews were conducted, only 249 of those contacted actually attended.

Attendees were given a comprehensive briefing on the content of the Draft Strategy when they arrived at a forum. At the end of the meetings, attendees were invited to fill out a questionnaire. Some attendees brought others with them and in total over 255 questionnaires were available.

Questionnaires were analysed and the results weighted by age and sex to compensate for any bias from non-attendance and ensure that the ACT's demographic profile was appropriately represented.

G.5.3. Outcome

The questionnaire contained a summary question asking the respondent the extent to which they would give their general support to the Draft Water Strategy. Of the respondents, 38 percent indicated that they very much supported the strategy with an additional 52 percent indicating that they supported most aspects. The key strands of the strategy that received the most support were initiatives towards greater user education and awareness and towards greater conservation and water use efficiencies. These aspects were placed in the top two priorities by 70 percent of attendees. The alternative of building another dam was the last priority for 76 percent of attendees.

The results of the questionnaire for each of the aspects considered are as follows:

- Education and awareness – 64 percent agreed that ACTEW's advertising campaigns should continue and 88 percent endorsed the evolution of the campaign to focus on how specifically water savings could be made;

- Conservation and efficiency – 88 percent agreed with the provision of more information at point of purchase regarding which home appliances were more water efficient. An equal level of support was found for the provision of more information on the better use of current appliances. 91 percent agreed that the government should set an example in future water conservation and usage efficiencies;
- Pricing – 47 percent considered the current pricing system unfair, with most of the belief that pricing should reflect all financial and environmental costs and that it should employ a water conservation incentive. The principle of "user pays" received widespread community support;
- Regulation in drought – 63 percent would accept moderate restrictions in drought, 25 percent would accept some restrictions. In times of extreme drought, 60 percent would accept a proposed 50 percent reduction in consumption; and
- Alternative sources – 83 percent supported the use of groundwater or stormwater as opposed to potable water for irrigation purposes. Only 20 percent totally supported the use of treated effluent as drinking water, however 79 percent endorsed the use of treated effluent for irrigation purposes. 53 percent of respondents supported the use of rainwater tanks on private property for drinking water. Only 15 percent of respondents expressed total support for the proposal of an additional dam as an alternative water source.

Given the above results, ACTEW concluded that:

- ACT citizens would provide firm support for the Draft Water Strategy;
- the community would support a change to a lower fixed charge with a usage charge from the first litre consumed; and
- the community would accept modest restrictions in times of drought if this had the tangible benefit of delaying the construction of another dam.

APPENDIX H. PHASE ONE: WATER AND WASTEWATER STAKEHOLDER CONSULTATION

H.1. Summary of Possible Water/Wastewater Attributes

The following possible attributes were identified as part of our discussions with ActewAGL, ACTEW Corporation, and other stakeholders for water / wastewater:

- security of supply, expressed as probability of water restrictions, eg:
  - restrictions on garden watering, once every 10 years;
  - restrictions on garden watering, once every 5 years;
  - restrictions on garden watering, once every year during summer;
  - a ban of all outdoor water use during summer;
- number of interruptions per annum;
- average duration of an interruption;
- information provided when supply is disrupted / sewer surcharge occurs unexpectedly:
  - 24 hour, operator manned call centre;
  - Recorded message at a designated call centre number;
  - Customers have own designated emergency telephone number to call'
- prior notification of a planned interruption;
- time to answer the telephone;
- width of appointment windows;
- keeping appointments;
- meter reading cycle; and
- time to connect a customer.

In addition, the following concepts and / or new 'services' were identified during discussions as topics for exploration in the focus groups:

- are customers sensitive to the timing of interruptions? Would customers like to be given a choice as to the timing of planned interruptions?
- what aspects of odour, colour and taste of water are important to customers?
- are customers willing to use re-use water on gardens – both public and private gardens?

- would customers like to have their drinking water sourced from the tap filtered?
- is water pressure an issue for customers?
- is the addition of chlorine / fluoride an issue for customers?
- would customers be interested in pre-paid meters?
- are customers aware of odours coming from sewer vents on or near their property?
- have customers experienced a sewer overflow or surcharge?

H.2. Discussion with ACTEW Corporation and ActewAGL

The project team held a meeting to discuss attributes of the water and wastewater service with ACTEW Corporation and ActewAGL representatives between 8.30am and 11pm on 18 November 2002.

ACTEW Corporation and ActewAGL representatives were:

- John Dymke, ActewAGL
- Murray Basnet, ActewAGL
- Leigh Crocker, ActewAGL
- Bill Leane, ActewAGL
- Mike Luddy, ACTEW
- Wayne Harris, ActewAGL
- Asoka Wijeratne, ACTEW
- Matt Kelly, ActewAGL
- Craig Richardson, ActewAGL
- David Skillman, ActewAGL
- David Graham, ACTEW

Project team representatives were:

- Greg Houston, NERA
- Nina Shore, NERA
- Anna Corluka, ACNielsen

H.2.1. Issues Discussed

After a brief introduction and summary of the study's objectives by the project team, the group discussed the following issues:

H.2.1.1. General overview

The Cotter catchment supplies the majority of the ACT's water needs (95 percent) in a 'normal year'. It is a closed catchment. The remaining 5 percent is supplied from the Googong catchment, which is used to meet peak summer demand. Googong is an open catchment. This year, 25 percent of water has been sourced from the Cotter, while 75 percent has been sourced from Googong. Operating costs at Googong are about $38 per ML, while the costs at the Cotter are $6-9 per ML.

There are very few industrial customers in the ACT. Laundries and small meat processes are the key examples. The majority of water use is for garden maintenance (over 50 percent). Large users of water are Parliament House and ANU, who use water for irrigation.

Average consumption is about 65 GL per annum (although this year, consumption is more likely to be 75 GL). Around 33 GL is released back into the river (after treatment) at ACTEW's wastewater treatment plant at Lower Molonglo (LMWQCC).

Currently properties are metered rather than premises, which implies that apartments/townhouses within a block are not individually metered. This has implications for customers' incentives.

H.2.1.2. Reliability of the water service

The main causes of supply interruptions are third party effects and tree roots intruding into the mains. Tree roots are a particular issue for wastewater.

Planned interruptions are required to replace/repair mains and water meters.

Typically, the duration of an interruption to the water supply will be 0.5 to 1 hour. The Consumer Protection Code requires interruptions to be restored within 5 hours.

Frequency of interruptions is likely to be more important than duration to a customer. Timing is also likely to be an issue. Customers could be offered a choice of time for planned interruptions. For example, maintenance or repairs could be done at 2am (reducing the inconvenience of having no water), although the associated noise may be of issue to customers.

Participant's experience suggests that it is important to customers to be kept informed of the likely duration of an interruption.

Customers must be advised at least seven days in advance if ActewAGL requires access to a customer's property. A reduced period could be valuable, as it may add to the flexibility of ActewAGL's maintenance team – although the significance of this is debateable.

H.2.1.3. Security of supply

Typically, water restrictions occur once every 5-10 years.

The ACT is facing water supply constraints, and a new dam is on the horizon. If a dam is not constructed then customers face an increased chance of deeper and more frequent water restrictions.

Voluntary restrictions have now been put in place in the ACT due to the drought. Participants discussed the implications of this for the study, concluding that the results would remain unaffected as long as the perceptions / attitudes of customers did not change during the period over which data was collected.

The security risk of terrorist attacks was raised as a potential issue.

H.2.1.4. Re-use

Re-use was raised as a potential, alternative supply source – particularly for irrigation.

At this stage, a comprehensive 're-use network', encompassing re-use for 'indoor' use, is unlikely to be cost effective. Facilitating water recycling from the treatment plant at Lower Molonglo would be at a cost of 5 or 10 times the current price of mains water. Recycling using 'local' treatment plants could be undertaken at a cost of 3 times the price of mains water.

In any event, participants expected that only a limited number of individuals would be willing to adopt re-use for 'indoor' uses. For example, only 4,500 customers have taken-up ActewAGL's energy equivalent of 'Green Choice'.

The participants considered that it would be useful to understand respondents' willingness to use re-use water on gardens – as outdoor water use is what is driving the need for a new supply source. Watering of both public ***and*** private gardens is relevant.

Participants were also keen to understand the extent to which customers understand that the majority of water used in the ACT is for garden watering.

H.2.1.5. Rainwater tanks

ActewAGL could offer a service to customers to maintain their rainwater tanks.

H.2.1.6. Stormwater

Stormwater is currently outside the scope of ACTEW and ActewAGL's responsibilities. However, it could provide an alternative supply source for garden watering.

H.2.1.7. Quality of water supply

Drinking water in the ACT is treated to meet the national water drinking guidelines (NHWRC guidelines, 1996).

Odour, colour and taste are likely to be the most important aspects of water quality to customers.

The types of customers that are likely to be sensitive to water quality include:

- photo labs;
- chemical based, commercial laboratory; and
- ice manufacturers.

H.2.1.7.1. Water clarity and taste

Water is not currently filtered at the Stromlo treatment plant (which serves the Cotter catchment), while filtration takes place at Googong. There may be a preference by some customers to have their water 'filtered'. Introducing filtration at Stromlo would involve an upfront capital cost of $40 million, and between $2 and 3 million per annum in operating costs.

Water at Googong is marginally 'harder' than water sourced from the Cotter system – although a customer is unlikely to be able to notice the difference.

Algal blooms in the Cotter catchment area (which often occurs in late summer) can have implications for the taste/odour of water. Similarly, fires in the Cotter catchment area can result in ash being suspended in water supplies. These incidents can, at times, result in water supply restrictions. Both of these issues could be addressed by upgrading treatment at Stromlo – ie, by adding filtration – which would reduce the probability of restrictions.

H.2.1.7.2. Chemicals

Participants thought that the addition of chlorine at Stromlo might be an issue for some customers.

H.2.1.8. Pressure of water supply

Pressure requirements are very customer specific. A small number of customers may have particular pressure needs, however they are unlikely to be willing to pay the cost to upgrade the system.

Relatively low pressure can be found in the following (residential) areas of Canberra:

- Guger Street, Torrens; and
- Cobby Street, Campbell.

H.2.1.9. Noise

Noise transmission between homes through water pipes is an issue with some homes in the ACT. This is not a problem in residences that have dual piping. It is possible to resolve the issue through a dedicated connection (at a cost of $5000).

H.2.1.10. Environmental flows

Quite a bit of discussion focussed on environmental flows, and their implications for ActewAGL's operations.

'Low flow' inflows are released as 'environmental flows', with the aim of maintaining the natural flow of rivers. The EPA currently requires the bottom 20 percent of flow rates to be released this way (about 40 GL).

The recent increase in flows was discussed, including the attributed benefits to two species of fish.

The conclusion to the discussion was that environmental flows were not relevant for study.

H.2.1.11. Reliability/quality service attributes of the wastewater service

The most significant reliability issue for wastewater is 'surcharges', which involve a backflow of sewage into homes (through the shower or water grates at the front of a home). ActewAGL currently responds to 1 or 2 surcharges a month.

At times, ACTEW / ActewAGL receives complaints of odours coming from sewer vents on the customer's premise. ActewAGL could eliminate or reduce the odour problem, by installing 'odour treatment unit' at the vent. This is very costly, and no units have ever been installed.

ACTEW conducted a study in the early nineties which concluded that customers were willing to pay more for a higher quality of wastewater treatment. The conclusions of this

study led to the introduction of the 'environment levy' in the wastewater charge, and an upgrade of the treatment plant at Lower Molonglo.

There are relatively few sewer overflows. Sewer overflows are potentially a problem in the older suburbs of Canberra, in North and South Canberra, during heavy rainfall. This could be reduced from 3 incidents per year to 1 in 5 years, by installing retention tanks in the sewerage system. Sewer overflows filter through to lakes and/or streams causing these watercourses to be closed to the public for days or weeks.

ActewAGL accepts trade waste into the sewer if it meets a national standard. The existing charging structure for wastewater is not reflective of the cost of trade waste (it is based on fixtures (flushing units) rather than the amount of trade waste discharged into the sewer).

H.2.1.12. Pricing

Participants agreed that it would be useful to seek customers' views on seasonal pricing. In particular, it would be useful to understand whether customers would be willing to pay a premium for water use in summer.

H.2.1.13. Metering and billing cycle

Participants considered that customers' willingness to use prepayment meters is an issue worth exploring, as is more frequent billing/reading of the meter. In particular, ACTEW and ActewAGL would like to know whether commercial customers would prefer monthly billing.

H.2.1.14. Customer Service

ActewAGL does not restrict or disconnect customers for non-payment. This is ACTEW and ActewAGL policy. Typically, bad debts of between $10,000 and $12,000 are written off each year.

Currently, properties are metered at the point of connection. Participants considered that it would be worth exploring whether customers would be willing to individually meter separate buildings on their property. ANU is one example. ANU has different water quality/service needs around campus – however it has only one 'connection point' and therefore one meter. The CSIRO and the War Memorial are other examples.

H.3. Discussion with ICRC

On 18 November the project team met with the staff at the ICRC. The ICRC raised the following water/wastewater issues as potential topics for the study:

- customers' consciousness/views on the level of the 'step' in the water tariff;

- customers' willingness to pay to protect the environment;
- customers' willingness to pay for and use recycled water;
- customers' willingness to pay for existing service standards;
- the ability of customers to manage their demand; and
- customers' views on the minimum standards in the Consumer Protection Code.

APPENDIX I. PHASE ONE: EXISTING STANDARDS IN THE ACT FOR THE NATURAL GAS SERVICE

The ***Utilities Act 2000*** is the primary instrument governing service standards in the ACT. It applies to all utilities providing gas distribution and retail, electricity distribution and retail, water, and sewerage services.

The ***Utilities Act*** requires all utilities operating in the ACT to adhere to a range of customer service standards, and gives force to a number of industry codes of practice. These codes include the Consumer Protection Code, which covers all of the gas retail, electricity distribution and retail, water, and wastewater services. The service standards specified in the code are orientated to 'customer service' type standards such as response times to queries and complaints.

The ***Utilities Act*** also outlines a number of rights and obligations regarding a utility's network operations. These include the right for a utility to make repairs to its network on private land, the right of the landowner to receive notification of such repairs and the requirement for the utility to minimise any damage to the property.

The specific provisions in the ***Utilities Act*** and the industry codes, as they relate to gas, are outlined below.

I.1. General Legislated Service Standards

As noted, a utility is required to meet a number of performance and service standards as outlined in the ***Utilities Act*** and Consumer Protection Code for each of its services. A utility is exempt from these standards to the extent that alternative arrangements have been agreed between the utility and the customer, and/or "events and conditions, outside of the control of the utility, including emergencies declared under the ***Emergency Management Act 1999***, prevent the utility from complying with the performance standard".

I.1.1. Utilities Act[51]

Division 7.3 of the ***Utilities Act*** requires a utility to meet and report on a number of standards for each utility service, including:

- connect or vary connections when requested;
- limit damage etc to landholders' property;
- provide notice to landholders when undertaking network operations;

[51] A copy of the ***Utilities Act 2000*** is available at http://www.icrc.act.gov.au/WhatsNew/index.html.

- provide notice to any other affected utility when undertaking network operations;
- restore landholders' property after undertaking network operations; and
- ensure all authorised persons are issued with identity cards and receive any necessary training.

In 2001/02, ActewAGL received no complaints from customers regarding its compliance with these requirements, with the exception of restoring landholders' property after undertaking network operations. Eighteen complaints were received, the majority of which concerned the restoration of driveways and footpaths.[52]

I.1.2. General Environmental Standards

ActewAGL is required to comply with a number of state, national, and international standards, including the ***ACT Environmental Protection Act 1997***, ***ISO 9002*** and ***ISO 14001***. ActewAGL must also operate within the framework of 'ecologically sustainable development'.

The ***ACT Environmental Protection Act 1997*** legislates a requirement for everyone living in the ACT to look after the environment by minimising the damage they inflict on the environment. Companies such as ActewAGL and Agility are required to report any harm they cause the environment through their activities.

The ISO 9000 series is a set of standards for managing quality. They consist of a framework for ensuring a company produces a high quality product and include a process for continually monitoring and improving quality.[53]

ISO 14001 was first published in 1996, and details the requirements for an 'environmental management system' – that is, a framework for reviewing and improving environmental performance. It applies to those environmental aspects over which the organisation has control, and can be expected to have an influence on environmental degradation, such as reducing carbon dioxide levels.[54]

---

[52] ActewAGL, ***Gas Distribution Utility – Report to ICRC***, 2002.

[53] A copy of the ISO 9000 series can be found at: http://www.iso.ch/iso/en/iso9000-14000/iso9000/iso9000index.html

[54] A copy of the ISO 14001 standard can be found at: http://www.iso14000-iso14001-environmental-management.com/iso14001.htm.

I.2. Customer Service

I.2.1. Consumer Protection Code[55]

The standards set out in the Consumer Protection Code are designed to ensure that utilities provide a "satisfactory level of customer service, while continuing to meet pricing regulations". The following standards specified by the code are relevant for the gas, electricity, water and wastewater services. Where possible, comparisons are made to minimum service standards for electricity and gas businesses in other Australian states and countries:

- ***consumer connection times:*** a customer must be connected on the same day as a request is made, or by close of business the following day if the request is made after 2pm. A $60 penalty applies for each day the customer remains unconnected;
- ***keeping agreed appointments:*** ActewAGL must not arrive more than 30 minutes late for an appointment unless a minimum of 1 hour's notice has been given. A minimum of 24 hours notice is required if an appointment is to be cancelled. A penalty of $20 applies if this standard is not met;
- ***responding to written customer account queries:*** ActewAGL must acknowledge a customer query within 10 business days and respond within 20 business days or pay a $20 penalty;
- ***responding to written customer complaints:*** if the complaint requires a visit to the customer's premises it must be acknowledged within 10 working days and responded to within 20 working days. In all other cases a response is required within 10 business days. The penalty for non-compliance is $20;
- ***response time to customer notification of problem or concern:*** if the notification relates to damage to the network which has the potential to affect public health or safety, a response is required within 6 hours. All other concerns must be investigated within 48 hours. If these standards are not met, a utility must pay each affected customer a $60 rebate;
- ***planned interruptions to utility services:*** at least 2 days notice of a planned interruption must be given to all customers. The supply must be reinstated as soon as possible and within 12 hours. A $50 penalty to all affected customers applies if the utility fails to meet this standard; and
- ***unplanned interruptions to utility services:*** a 24 hour telephone service must be established within 12 hour of being advised of an interruption, subject to a $20 penalty. Supply must be reconnected as "soon as possible".[56]

[55] A copy of the Consumer Protection Code 2000 is available on the above website.

I.2.2. ActewAGL's own internal 'customer service' measures

In addition to the legislated requirements, ActewAGL has an internal target of answering 90 percent of calls within 20 seconds, and abandoning less than 2 percent of calls.[57]

I.3. Network Reliability Standards

With respect to gas network reliability, the Consumer Protection Code specifies that:

- planned interruptions to the gas network should not exceed 25 hours in total per annum;
- a burst pipe should be attended to within 3 hours, in an average of 90 percent of cases, when the burst or leak is causing or is likely to cause damage or harm to customers, property, or the environment, or within 24 hours where the burst or leak is not having an impact on customers, property or the environment; and
- complaint and dispute management procedures should be in place.

ActewAGL met all of these requirements in 2001/02. It received 310 notifications of network problems, all of which were responded to within the given time. The longest disruption to any given premises was 7 hours. There were 136 unplanned interruptions.

ActewAGL did not pay any rebates, however it paid 5 claims seeking compensation for damage to a total of $545.

I.3.1. ActewAGL's own internal measures of network reliability

In addition to the legislated service standards, ActewAGL has its own internal measures of network reliability:

- at least 90 percent of gas disruptions should be restored within 4 hours; and
- gas interruptions should not exceed 1 per 100 properties per year.[58]

ActewAGL achieved its target of restoring gas disruptions, with 99 percent being restored within 4 hours in the period 2000/01 and 99.8 percent restored in 2001/02. The target for

---

[56] This compares to UK gas distributors who are required to restore supply within 24 hours. See NERA, ***Review of Energy Licensing Regimes in NSW***, ***Part 3 Appendix A,*** a report prepared for the Independent Pricing and Regulatory Tribunal, January 2002, page 14. At the time of writing this report was available on the IPART website: http://www.ipart.nsw.gov.au/.

[57] ActewAGL ***Annual Report, 2001-2002***, page 23. A copy can be found at http://www.actewagl.com.au/publications

[58] ActewAGL, ***Annual Report***, 2001-2002.

gas interruptions was achieved in both 2000/01 and 2001/02, with 0.22 and 0.62 gas disruptions per 100 properties respectively.

APPENDIX J. PHASE ONE: A SURVEY OF OTHER RELEVANT NATURAL GAS STUDIES

J.1. Summary of Topics Typically Adopted in Other Studies/Research

The types of product attributes typically adopted in other stated preference studies for gas, include:

- frequency and duration of service interruptions;
- notification timing and method prior to a planned interruption;
- making and keeping appointments with customers;
- advising customers of compensation payments;
- time taken to answer the telephone at the customer call centre;
- meter reading frequency;
- time taken to connect new customers;
- response times to customer queries;
- response time to gas leaks;
- provision of back-up supplies in an emergency/extended interruption; and
- technical aspects of gas quality including heating value, pressure and odourisation.

J.2. Gas Transporters' Standards of Performance Study, UK, IFF Research, 2001[59]

J.2.1. Objective

The ***Gas Transporters Standards of Performance*** study was completed in July 2001 as part of a wider review of Transco's price controls.[60] IFF Research was commissioned to complete a customer survey on behalf of OFGEM to determine which services were most important to gas customers in order to set minimum standards for gas transporters.

The objectives of the customer survey were to assess:

- customers' awareness of Transco and other gas transporters;

---

[59] IFF Research, ***Gas Transporters Standards of Performance Study*** – Quantitative Stage, July 2001, p. 76, available at time of writing on http://www.ofgem.gov.uk/docs2001/iffresearch.pdf

[60] Transco is a gas transport utility in the UK.

- customers' satisfaction with Transco's level of performance;
- customers' views on the appropriate standard of performance and compensation levels;
- customers' willingness to pay for improvements in standards of performance; and
- the cost of supply interruptions to customers.

OFGEM used the results of the survey to develop minimum service standards to ensure customers had some level of protection in the non-contestable areas of Transco's operation.[61]

J.2.2. Methodology

IFF Research conducted 2,575 interviews with domestic gas customers throughout Great Britain. A total of 2,267 'Random Digit Dialling' interviews were carried out within a sample frame, designed to produce an even number of interviews within each Local Distribution Zone (LDZ). A further 308 interviews were conducted within areas known to have experienced disruptions to the gas supply. The duration of each interview was about 15 and 20 minutes.

The survey was weighted by LDZ, the number of adults in the household, housing tenure, any service visit by Transco in the last 12 months, any reconnection in the last 12 months, any gas leaks in the last 12 months, any planned interruptions to supply in the last 12 months, and any unplanned interruptions in the last 12 months.

A total of 1203 interviews were conducted with industrial and commercial customers. Of these 898 customers were chosen randomly with a further 305 interviews conducted in areas know to have experienced interruptions.

J.2.3. Outcome

Customers were asked to respond to a number of possible service standards, as detailed in the table below:

[61] OFGEM, ***Review of Transco's price control from 2002,*** June 2001, available on www.ofgem.gov.uk

Table 1: Summary of Acceptability of Standards[62]

Standard	Acceptable to approximately 75 percent	Acceptable to approximately 90 percent
Calls to be answered within…	Domestic: 30 seconds	Domestic: 30 seconds
	I & C: 30 seconds	I & C: 30 seconds
Unplanned interruptions – informed of day of re-connection after…	Domestic: 24 hours	Domestic: 24 hours
	I & C: 24 hours	I & C: 24 hours
Appointments made for…	Domestic: am / pm-slot	Domestic: 2 hour slot
	I & C: am / pm slot	I & C: 2 hour slot
Unplanned interruptions – notified within…	Domestic: 6 hours	Domestic: 3 hours
	I & C: 6 hours	I & C: 2 hours
Property reinstated within…	Domestic: 10 days	Domestic: 3 days
	I & C: 5 days	I & C: 2 days
Letters acknowledged within…	Domestic: 7 days	Domestic: 5 days
	I & C: 10 days	I & C: 5 days
Notice of planned interruptions…	Domestic: 3 days	Domestic: 5 days
	I & C: 5 days	I & C: 5 days
Complaints resolved within…	Domestic: 10 days	Domestic: 5 days
	I & C: 10 days	I & C: 3 days
Engineers visit made within…working days of acknowledgement of request	Domestic: 5 days	Domestic: 2 days
	I & C: 5 days	I & C: 2 days
Supply restore within…	Domestic: 18 / 24 hrs	Domestic: 12 hours
	I & C: 18 / 24 hours	I & C: 6 hours

The above data were used to form the following minimum service standards:[63]

- transport companies will be required to restore domestic customers' supplies within 24 hours following interruptions (acceptable to around 73 percent of domestic customers and 72 percent of non-domestic customers);
- customers' premises must be permanently reinstated within 10 working days of completion of work (acceptable to 76 percent of domestic customers and 67 per cent of business customers);
- transport companies must make a morning or an afternoon appointment, or a timed appointment if requested by the customer (acceptable to 82 percent of domestic customers and 85 percent of non-domestic customers);
- transport companies must provide adequate heating and cooking facilities in the event of a gas emergency;

[62] IFF Research, ***Gas Transporters Standards of Performance Study*** – Quantitative Stage, July 2001, p. 2

[63] OFGEM, ***Review of Transco's price control from 2002,*** June 2001

- 90 percent of telephone calls should be answered within 30 seconds;
- for interruptions affecting less than 250 customers, customers should be informed individually and supply should be restored within 6 or 12 hours;
- for interruptions affecting more than 250 customers, customers should be informed using public announcements. Progress charts should be displayed locally and updated information provided every 24 hours (acceptable to 88 percent of both domestic and business customers);
- following the receipt of correspondence or a complaint, and where it is appropriate to visit a customer's property, contact must be made within 2 working days and visits within 5 working days (acceptable to 86 percent of domestic customers and 75 percent of non-domestic customers);
- correspondence must be acknowledged within 5 working days (acceptable to 92 percent of domestic customers and 94 percent of business customers);
- complaints should be resolved within 10 working days (acceptable to 76 percent of domestic customers and 71 percent of business customers); and
- uncontrolled gas escapes should be attended within 1 hour, controlled gas escapes within 2 hours.

J.3. Experience of the Competitive Market, UK, MORI, 2001[64]

J.3.1. Objective

In 2001, the Office of Gas and Electricity Markets (OFGEM) commissioned research with the aim of establishing whether the introduction of competition into the electricity and gas markets had been successful. The Market and Operational Research Institute (MORI) was engaged to perform the customer survey. The results of the study are set out in the report ***Experience of the Competitive Market.***

The main objectives of the study were:[65]

- to determine customers' awareness, knowledge and experience of electricity and gas competition;
- to consider customers' reasons for switching and not switching and their experiences of being able to switch;
- to evaluate any problems experienced with the switching process and new suppliers;

---

64 MORI, ***Experience of the Competitive Market***, January 2001, http://ofgem.gov.uk/docs2001/08_morireport.pdf

65 ***Op cit*** p. 1

- to examine issues affecting disadvantaged customers, including prepayment meter customers, and how competition is impacting upon them;
- to evaluate views regarding service standards in the industry;
- to establish whether there are any significant differences in attitudes towards, and experiences of, competition between the electricity and gas markets; and
- to put the findings in context with the 1999 research – highlighting any significant differences.

The resulting data was used to assess the progress of competition in the electricity and gas markets and its impact on consumers.

J.3.2. Methodology

MORI conducted 2,238 interviews with domestic electricity and gas customers. These interviews were conducted face-to-face in the home. The interviewers were provided with a list of addresses in the sampling area and instructed to achieve a certain quota for age, working status and social class.

The survey was weighted to the known profile of the population by age, working status and social class. It was also weighted to the percentage of electricity switchers at the time of the fieldwork.

J.3.3. Outcome

In relation to service standards, respondents were asked to rate twelve aspects of service for electricity and gas suppliers – including:

- getting supply back quickly;
- warnings when supply is cut;
- making and keeping appointments;
- advising of compensation payments;
- answering the telephone quickly and efficiently;
- annual meter readings;
- quick and efficient supplies to new customers;
- responding quickly to prepay meter faults;
- responding quickly to bill queries;
- quarterly meter readings;

- responding quickly to letters; and
- prompt estimates for jobs.

The key findings were:

- the majority of customers considered all twelve aspects of the service 'fairly' important;
- the two most important aspects were 'restoring power' and 'advising of impeding power failures';
- respondents were relatively insensitive to the ***number*** of power cuts;
- keeping appointments, advising customers of compensation payments and answering the telephone quickly and efficiently were identified as important standards;
- annual meter readings are preferred to quarterly readings;
- responding quickly to prepay meter faults is important, although mostly to those who pay by prepayment meter;
- when disruptions occur the priority for customers is a quick response to rectify the problem, followed by the provision of good, clear information at the time, and being able to get through easily on the phone;
- the majority of customers favoured retaining the concept of minimum standards of performance;
- when offered the choice of a reduction in price and abolishing minimum standards or retaining the minimum standards, the majority again preferred the latter. Those who favoured a price reduction thought that an average reduction of 29 percent in price would be appropriate; and
- when asked how ***resources*** should be directed regarding the issue of power cuts, most respondents identified reducing the duration of power cuts as the first priority. The frequency with which they happen was the second most important objective, followed by responding to questions during a power cut.

The findings of the study were consistent with those from the 1999 survey.[66]

[66] OFFER, ***Quality of Supply – Attitudes of Business and Domestic Electricity Customers,*** January – March 1999, available at www.ofgem.gov.uk

J.4. Gas Distribution: Monitoring Service Quality, Queensland Competition Authority, Australia, 2002[67]

J.4.1. Background

The Queensland Competition Authority (QCA) is responsible under the Gas Pipelines Access (Queensland) Act 1998, and the National Third Party Access Code for Natural Gas Pipeline Systems (the Code) for approving access arrangements for covered gas distribution networks in Queensland. The QCA has recognised the possibility for service quality to be sacrificed in exchange for higher profits, and has therefore decided to establish an ongoing service quality monitoring regime over the course of the first access arrangement period.

This discussion paper provides an overview of the nature and scope of service quality issues relevant to gas distribution in Queensland, and seeks comment and input from interested parties. It discusses the objectives and factors to be considered when establishing a service quality monitoring scheme and considers the more common measures upon which service quality monitoring can be based.

J.4.2. Features of a Service Quality Monitoring Regime

The attributes which could be monitored include:

- reliability;
- the quality of gas supply; and
- customer service.

These attributes are discussed in more detail below.

Measures chosen to monitor these attributes would generally target aspects of service quality that:

- are of value to customers;[68]
- are within the control of the service provider;[69] and

---

[67] QCA, ***Gas Distribution: Monitoring Service Quality***, Discussion Paper, November 2002.

[68] Customer value refers to the importance customers place on, or preferences customers have for, particular service attributes. Customer preferences translate into a willingness to pay and can be used to allocate resources to producing the most efficient level of service, both in terms of quantity and quality. The importance of attributes will vary, depending on the type of customer. For example, commercial customers have different needs than small domestic users.

[69] Ideally, performance measures should reflect strategies and activities where the outcome is controllable by the service provider. It may therefore be appropriate to exclude measures such as outages caused by actions of no

- ensure areas of service are not ignored (minimum vs average performance).[70]

J.4.3. Reliability of Gas Supply

The reliability of gas supply refers to the ability of the service provider to maintain continuous gas supply to customers. Measures commonly used by regulators in Australia include:

- planned outages / interruptions;
- unplanned outages;
- the number of customers affected by outages;
- the number of minutes or hours off gas supply – provides information on the response capability of the service provider;
- gas leaks – provides an indication of the condition of existing assets and the effectiveness of past renewal programs; and
- unaccounted for gas – indicates the difference between the quantity of gas delivered into and withdrawn from a network in a given period.

The QCA are seeking comments on which measures of reliability are relevant to Queensland, and whether there is a need to distinguish between the reliability of different pressure sections of the network.

J.4.4. Quality of Gas Supply

Gas quality refers to the technical standard of specification of gas supplied. These specifications normally relate to such things as heating value, pressure and odourisation.

---

fault of the network operator. However, it is not always clear what activities to exclude. For example, while events caused by third parties may be beyond the control of the service provider, there is still an onus on the service provider to undertake such risk management strategies as may be appropriate to mitigate the potential impact on customers of such events. In addition, the costs of protecting some users from extreme and infrequent events may exceed the potential benefits to customers. The QCA are seeking comments from interested parties on whether service standards should only include those aspects of service under the control of the service provider.

[70] Reporting against minimum measures would assess whether services delivered to individual customers fell below a specified level. Minimum measures may encourage more equitable outcomes for all customers by promoting a degree of uniformity in service quality outcomes. Reporting against average measures would assess service quality across all (or groups of) customers and could mask pockets of low service quality. Focusing on average service quality measures may encourage the service provider to improve apparent performance by raising service quality outcomes for those customers where it is less difficult and less costly to do so, while some customers could continue to experience sub-standard service quality. The QCA are seeking comments on the relative merits of adopting minimum or average service quality measures.

In Queensland, the Gas Act 1965 and the associated Gas Regulations 1989 provide the legislative framework for the operation of natural gas distribution networks. Among other things, clauses in the regulations provide for:

- gas quality, composition and characteristics – must comply with specifications and any variations are to be within the prescribed limits;
- heating values – minimum values are to be declared and approved for each type of gas and restricted to particular consumers or classes of consumers, designated areas and to particular appliances and fittings;
- outlet pressures – must meet the minimum levels;
- odourisation of gas;
- non-conforming gases – not to be supplied without regulator approval.

The QCA are seeking comments on whether measures of technical quality should be included in the monitoring regime, and if so, what measures would be most appropriate.

J.4.5. Customer Service

Customers expect some measure of efficiency and responsiveness from the service provider in the handling of issues such as complaints and reported leaks. The majority of end users have very little direct interaction with the distribution service provider. End users experiencing problems are likely to contact the relevant gas retailer. However, some reported problems will ultimately be the responsibility of the distribution service provider.

In Australia, few regulators publish customer service information specifically aimed at gas distribution. The ESC in Victoria measures:

- the number of calls to the call centre fault line; and
- the number of complaints.

The Australian Gas Association provides customer service measures, including:

- average price of gas ($/GJ);
- average sales per customer (GJ);
- average annual bill ($);
- real price change (percent) between consecutive years;
- unplanned customer interruptions per thousand customers per year, regardless of cause;

- length of interruption / outage, in seconds per customer per year; and
- telephone response times – the proportion of calls answered within 20 seconds and proportion of calls abandoned.

The QCA are seeking comments on how users interact with network operators in relation to customer service, whether customer service is an aspect of service quality that should be monitored, and what measures of customer service should be considered.

APPENDIX K. PHASE ONE: GAS STAKEHOLDER CONSULTATION

K.1. Summary of Possible Gas Attributes

The following attributes were identified as part of our discussions with ActewAGL and other stakeholders for gas:

- number of outages per annum;
- average outage duration;
- average outage duration;
- information provided when supply is disrupted unexpectedly:
  - 24 hour, operator manned call centre;
  - Recorded message at a designated call centre number;
  - Customers have own designated emergency telephone number to call;
- response time to customer complaint of a gas leak;
- prior notification of a planned interruption;
- time to answer the telephone;
- width of appointment windows;
- keeping appointments;
- meter reading cycle;
- time to connect a customer (with access to gas main).

In addition, the following concepts and/or new 'services' were identified during discussions as topics for exploration in the focus groups:

- Would customers be interested in paying more to have the utility lay gas pipes on their property at a deeper level (or replace them with steel pipes), reducing the possibility that the pipes will ever be 'hit' and damaged during digging activities on the customer's property? The utility currently charges $500 to repair a pipe if it is damaged in this way.
- Would customers be interested in the utility re-lighting appliances after a service interruption?
- Is gas pressure an issue for commercial customers?
- Do customers perceive a difference between the distribution and retail business?

- Is gas seen to be an effective substitute for electricity?

K.2. Meeting with ActewAGL and Agility

The project team held a meeting to discuss attributes of the gas network service with ActewAGL and Agility representatives between 11am and 1.15pm on 15 November 2002.

ActewAGL and Agility representatives were:

- Dale Weber, ActewAGL
- Anthony Vaughan, Agility
- Steve Angel, Agility
- Andrew Petch, Agility
- Fred MacDonald, ActewAGL
- Leigh Harkness, ActewAGL

Project team representatives were:

- Greg Houston, NERA
- Nina Shore, NERA
- Anna Corluka, ACNielsen

David Graham and David Skillman from ActewAGL also attended, as observers.

K.2.1. Issues discussed

After a brief introduction and summary of the study's objectives by David Graham and the project team, the meeting began with a discussion about general aspects of the service. This discussion raised the following issues:

- the delineation of responsibilities between the network (Agility) and retail (ActewAGL) businesses is not well understood by customers;
- ownership of the network changes at different places in the network, eg, at the property boundary, at the meter, etc;
- gas has been available in the ACT for about 20 years;
- market penetration is 85 percent;
- it is largely the older areas of Canberra that don't have access to natural gas;
- largest users of gas in the ACT include Parliament House and ANU; and

- gas is branded as the “energy of choice”.

K.2.1.1. Number of and reasons for service outages

Most service interruptions in the ACT - ie, 85 percent - are caused by the activities of third parties, eg, backhoe operators, or individuals digging in their garden.

ActewAGL / Agility currently charge $500 to repair pipe damage.

It would be possible to limit the number of service interruptions caused in this way by:

- relaying pipes on customer’s property to a depth of 2 metres instead of the existing 1 metre; and / or
- using stainless steel pipe instead of plastic pipes on customer premises.

ActewAGL / Agility could also offer a service to maintain the gas pipes (‘services’) owned by customers.

Most interruptions of this nature will only affect an individual customer. However, if mains are damaged by a third party then this is likely to affect a larger number of customers.

Interruptions can cause:

- road closures; and
- pilot lights in appliances to go out.

ActewAGL / Agility would be willing to ‘insure’ gas supply (at an extra cost of about $15 per annum). A service involving re-lighting appliances after a service interruption could also be provided (at extra cost).

There are some (but less often) occasions where interruptions are caused by network issues. The original design of the gas network (which allows leaks to be isolated when they occur) and maintenance of gas pressure ensures that these are kept to a minimum.

Load-shedding arrangements are in place. Customers are classified / prioritised into nine groups (across tariff and contract customers), based on reliability needs.

For highly sensitive customers, Agility has arrangements in place to maintain supply wherever possible. These cater specifically to the needs of the customer.

Back-up supplies are possible (eg, diesel), but costly.

Customer’s interruption ***experience*** is likely to be limited. The nature of the system means that, in reality, an interruption will cause ‘inconvenience’ rather than a ‘disaster’.

The need for planned outages is rare. An example is the replacement of meters, which occurs every 15 years. Commercial customers are notified of a planned interruption by Agility, while residential customers are notified through the retailer (ie, ActewAGL).

K.2.1.2. Response time and duration of outages

Agility can usually fix the service interruption on its first visit to the customer's premise. The internal standard is to respond to a customer query/complaint about a gas leak within 30 minutes.

If an interruption affects only a single customer, Agility will, on average, be able to restore supply within 1 hour. If the interruption is due to damage to a main, Agility will, on average, be able to restore supply on the same day. The longest time a customer has been without gas in the ACT is 7 hours.

K.2.1.3. Call centre

Two call centres are established to handle retail and distribution inquiries:

- one for emergencies, which is manned by the network business; and
- one of defined retail queries (bill inquiries, etc), which is manned by the retail business.

The telephone numbers for emergencies and retail inquiries are recorded on customer's bills.

The emergency number is a 24-hour service, and is operator manned (it is not machine operated). These characteristics are the minimum service requirement (as per the Consumer Protection Code). For known incidents, a message is recorded to provide information to customers.

K.2.1.4. Pressure

ActewAGL/Agility's capital works plans are highly focussed on maintaining gas pressure.

Variations in pressure can affect 'size of flame', but this is likely to affect only commercial customers. Once gas pressure falls to a certain level, the service will be interrupted.

Customers tend to complain of 'odour' when they register a query/complaint about a gas leak. The odour of gas can remain in soils for a period of time after a gas leak.

K.2.1.5. Network connections

Agility will connect a new service for residential customers within 20 working days, and commercial customers within 10 working days.

Agility could reduce the length of time to connect if a customer was willing to pay more – however, this would be costly. This is particularly so, given that connection is seasonal for the residential market (ie, connection is popular in winter).

If a customer's electrical hot water service breaks, then Agility will replace it with a gas hot water service within 24-hours (for those customers with ready access to a main).

K.2.1.6. Keeping appointments

Commitment to appointment times is likely to be more important to commercial customers compared to residential customers.

Contact with residential customers, and therefore the number of appointments, is limited. At times ActewAGL/Agility needs access to a customer's property – which requires an appointment to be made.

Existing standard is a 30-minute timeframe.

K.2.1.7. Price

ActewAGL/Agility suggested that customers dislike paying the fixed charge – particularly in summer.

A.1 Meeting with ICRC

On 18 November the project team met with the staff at the ICRC. The ICRC raised the following natural gas issues as potential topics for the study:

- customers' willingness to pay to protect the environment;
- customers' willingness to pay for existing service standards;
- the ability of customers to manage their demand;
- do customers perceive a difference between the network and the retail business;
- customers' views on the minimum standards in the Consumer Protection Code; and
- customers' views on whether gas is a substitute for electricity.

APPENDIX L. PHASE TWO: ACNIELSEN REPORT ON QUALITATIVE RESEARCH

APPENDIX M. ATTRIBUTES AND LEVELS FOR THE ELECTRICITY SEGMENT

M.1. Electricity Residential Customer Segment

M.1.1. Reliability

Number of times electricity is completely unavailable to your home

- 12 times per year
- 4 times per year
- 2 times per year
- 1 time per year
- Once every 5 years

Length of time that electricity is completely unavailable to your home each time that it goes out

- 24 hours[71]
- 12 hours
- 8 hours
- 6 hours
- 4 hours
- 2 hours
- 1 hour
- 30 minutes

Time of day that electricity is completely unavailable to your home each time that it goes out

- Over the weekend
- Over a weekday[72]
- Mon-Fri sometime after 6pm

[71] When B = 1 (24 hours), C can ONLY = code 1 (over a weekday) OR code 2 (over the weekend).

[72] Tied to B = 1

- Mon-Fri sometime after 8am
- Mon-Fri sometime after midnight

Prior notification that electricity will be unavailable to your home

- Electricity unavailable due to emergency – no notification possible
- No notification provided
- 1 day
- 2 days
- 7 days
- Two weeks

Response to phone inquiries in the event of electricity becoming unavailable to your home

- Your call is answered by an AUTOMATIC VOICE - the voice gives you the option of hearing a recorded message that gives you an up-to-date status report on any electricity supply issues by suburb, or to speak to someone but you may be put on hold before a person answers
- You get straight through to a PERSON - you are not put on hold and there is no machine directing you to press buttons

Total electricity bill for the year

- Price attribute to be within range of –10 percent to +50 percent of the respondent's actual (estimated) bill.

M.1.2. Quality

Number of times electricity is momentarily unavailable to your home (eg, clocks need to be re-set)

- Every day
- 12 times per year
- 4 times per year
- 2 times per year
- 1 time per year

Number of times lights flicker or dim at your home

- Every day
- 12 times per year
- 4 times per year
- 2 times per year
- 1 time per year

Number of times power surges / spikes are experienced at your home

- 12 times per year
- 4 times per year
- 2 times per year
- 1 time per year
- Once every two years

Total electricity bill for the year

- Price attribute to be within the range of –10 percent to +20 percent of the respondent's actual (estimated) bill.

M.2. Electricity Commercial Customer Segment

M.2.1. Reliability

Number of times electricity is completely unavailable to your premises

- Once a fortnight
- 12 times per year
- 4 times per year
- 2 times per year
- 1 time per year
- Once every 2 years
- Once every 5 years

Length of time that electricity is completely unavailable to your premises each time that it goes out

- 24 hours[73]
- 12 hours
- 8 hours
- 6 hours
- 4 hours
- 2 hours
- 1 hour
- 30 minutes

Time of day that electricity is completely unavailable to your premises each time that it goes out

- Over a weekday[74]
- Mon-Fri sometime after 8am
- Mon-Fri sometime after 6pm
- Over the weekend
- Mon-Fri sometime after midnight

Prior notification that electricity will be unavailable to your premises

- Electricity unavailable due to emergency - no notification possible
- No notification provided
- 1 day
- 2 days
- 5 days
- 7 days
- Two weeks
- One month

[73] When B = 1 (24 hours), C can ONLY = code 1 (over a weekday) OR code 4 (over the weekend)

[74] Tied to B = 1

Response to phone inquiries in the event of electricity becoming unavailable to your premises

- Your call is answered by an AUTOMATIC VOICE - the voice gives you the option of hearing a recorded message that gives you an up-to-date status report on any electricity supply issues by suburb, or to speak to someone but you may be put on hold before a person answers
- You get straight through to a PERSON - you are not put on hold and there is no machine directing you to press buttons
- The electricity company PERMANENTLY provides you with a SPECIAL phone number for a dedicated account manager who would handle your query - you are not put on hold and there is no machine directing you to press buttons

Total electricity bill for the year

- Price attribute to be within the range of –10 percent to +50 percent of the respondent's actual (estimated) bill.

M.2.2. Quality -

Number of times electricity is momentarily unavailable to your premises

- Every day
- 12 times per year
- 4 times per year
- 2 times per year
- 1 time per year

Number of times lights flicker or dim at your premises

- Every day
- 12 times per year
- 4 times per year
- 2 times per year
- 1 time per year

Number of times power surges/spikes are experienced at your premises

- 12 times per year

- 4 times per year
- 2 times per year
- 1 time per year
- Once every two years

Total electricity bill for the year

- Price attribute to be within the range of –10 percent to +50 percent of the respondent's actual (estimated) bill.

APPENDIX N. ATTRIBUTES AND LEVELS FOR THE WATER AND WASTEWATER SEGMENT

N.1. Residential Customer Segment

N.1.1. Reliability of water service -

Number of times water is unavailable to your home

- 12 times per year
- 2 times per year
- 1 time per year
- Once every 10 years

Length of time that water is unavailable to your home each time that it goes off

- 24 hours[75]
- 12 hours
- 8 hours
- 5 hours
- 2 hours
- 1 hour

Time of day that water is unavailable to your home each time that it goes off

- Over the weekend
- Over a weekday[76]
- Mon-Fri sometime after 6pm
- Mon-Fri sometime after 8am
- Mon-Fri sometime after midnight

Prior notification that water will be unavailable to your home

- Water unavailable due to emergency – no notification possible

[75] When B = 1 (24 hours), C can ONLY = code 1 (over a weekday) OR code 2 (over the weekend).

[76] Tied to B = 1

- No notification provided
- 1 day
- 2 days
- 7 days
- Two weeks

Response to phone inquiries in the event of water becoming unavailable to your home

- Your call is answered by an AUTOMATIC VOICE - the voice gives you the option of hearing a recorded message that gives you an up-to-date status report on any water supply issues by suburb, or to speak to someone but you may be put on hold before a person answers
- You get straight through to a PERSON - you are not put on hold and there is no machine directing you to press buttons

Total water and sewerage bill for the year

- Price attribute to be within the range –10 percent and + 20 percent of the respondent's actual (estimated) bill.

N.1.2. Water Restrictions

Chance that drought water restrictions will occur

- Once per year
- Once every 3 years
- Once every 10 years
- Virtually none

Duration of water restrictions

- All year
- All Summer
- 1 month in Summer
- No restrictions[77]

[77] To appear in an experiment only when 'never' appears for 'Chance that drought water restrictions will occur'.

Types of days that water restrictions apply

- Every day
- Every second day
- No restrictions[78]

Level of water restrictions

- Stage 5 - a ban on all outdoor water use (recycling water is permitted)
- Stage 4 – watering of lawns is not permitted. Hand held hoses and buckets can be used in the morning and evening
- Stage 3 – use of sprinklers is not permitted. Hand held hoses and buckets can be used in the morning and evening
- Stage 2 - can use sprinklers for up to three hours in the morning and evening
- Stage 1 – can use sprinklers morning and evening
- No restrictions[79]

Appearance of urban landscape including public lawns, parks and spaces

- Some brown lawns and no lush green lawns
- Lush green lawns

Total water and sewerage bill for the year

- Price attribute to be within the range of –10 percent and + 25 percent of the respondent's actual (estimated) bill.

N.1.3. Reliability of wastewater service -

Number of times you experience an overflow of sewerage

- 2 times per year
- 1 time per year
- Once every 2 years
- Once every 10 years

[78] To appear in an experiment when 'never' appears for 'Chance that drought water restrictions will occur'.

[79] To appear in an experiment when 'never' appears for 'Chance that drought water restrictions will occur'.

Source of overflow

- Inside your home
- Immediately outside your home
- At the nearest sewer manhole in the street

Response to phone inquiries in the event of a sewer overflow:

- Your call is answered by an AUTOMATIC VOICE – you are put on hold before a person becomes available to take your call
- You get straight through to a PERSON - you are not put on hold and there is no machine directing you to press buttons

Length of time before overflow is contained

- 2 days
- 24 hours
- 12 hours
- 8 hours
- 4 hours
- 2 hours
- 1 hour

Total water and sewerage bill for the year

- Price attribute to be within the range of –10 percent and + 20 percent of the respondent's actual (estimated) bill.

N.2. Commercial Customer Segment

N.2.1. Reliability of water service -

Number of times water is unavailable to your premises

- 12 times per year
- 2 times per year
- 1 time per year
- Once every 10 years

Length of time that water is unavailable to your premises each time that it goes off

- 24 hours[80]
- 12 hours
- 8 hours
- 5 hours
- 2 hours
- 1 hour

Time of day that water is unavailable to your premises each time that it goes off

- Over a weekday[81]
- Mon-Fri sometime after 8am
- Mon-Fri sometime after 6pm
- Over the weekend
- Mon-Fri sometime after midnight

Prior notification that water will be unavailable to your premises

- Water unavailable due to emergency - no notification possible
- No notification provided
- 1 day
- 2 days
- 5 days
- 7 days
- Two weeks
- One month

Response to phone inquiries in the event of water becoming unavailable to your premises

- Your call is answered by an AUTOMATIC VOICE - the voice gives you the option of hearing a recorded message that gives you an up-to-date status

[80] When B = 1 (24 hours), C can ONLY = code 1 (over a weekday) OR code 4 (over the weekend)

[81] Tied to B = 1

report on any water supply issues by suburb, or to speak to someone but you may be put on hold before a person answers.

- You get straight through to a PERSON - you are not put on hold and there is no machine directing you to press buttons
- The water company PERMANENTLY provides you with a SPECIAL phone number for a dedicated account manager who would handle your query - you are not put on hold and there is no machine directing you to press buttons

Total water and sewerage bill for the year

- Price attribute to be within the range of –10 percent and + 20 percent of the respondent's actual (estimated) bill.

N.2.2. Water Restrictions –

Chance that drought water restrictions will occur

- Once per year
- Once every 3 years
- Once every 10 years
- Virtually none

Duration of water restrictions

- All year
- All Summer
- 1 month in Summer
- No restrictions[82]

Types of days that water restrictions apply

- Every day
- Every second day
- No restrictions[83]

[82] To appear in an experiment only when 'never' appears for 'Chance that drought water restrictions will occur'.

[83] To appear in an experiment when 'never' appears for 'Chance that drought water restrictions will occur'.

Level of water restrictions[84]

- Stage 5
- Stage 4
- Stage 3
- Stage 2
- Stage 1
- No restrictions[85]

Appearance of urban landscape including public lawns, parks and spaces

- Some brown lawns and no lush green lawns
- Lush green lawns

Total Water and Sewerage bill for the year

- Price attribute to be within the range of –10 percent and + 50 percent of the respondent's actual (estimated) bill.

N.2.3. Reliability of wastewater -

Number of times you experience an overflow of sewerage

- 2 times per year
- 1 time per year
- Once every 10 years

Source of overflow

- Inside your premises
- Immediately outside your building
- At the nearest sewer manhole in the street

Response to phone inquiries in the event of a sewer overflow:

[84] See attached explanatory card, which details the staged restrictions for the commercial segment.

[85] To appear in an experiment when 'never' appears for 'Chance that drought water restrictions will occur'.

- Your call is answered by an AUTOMATIC VOICE – you are put on hold before a person becomes available to take your call
- You get straight through to a PERSON - you are not put on hold and there is no machine directing you to press buttons
- The water company PERMANENTLY provides you with a SPECIAL phone number for a dedicated account manager who would handle your query - you are not put on hold and there is no machine directing you to press buttons

Length of time before overflow is contained

- 2 days
- 24 hours
- 12 hours
- 8 hours
- 4 hours
- 2 hours
- 1 hour

Total water and sewerage bill for the year

- Price attribute to be within the range of –10 percent and + 20 percent of the respondent's actual (estimated) bill.

N.3. Explanatory Card for Commercial Segment

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Private gardens and lawns	Can use sprinklers morning and evening.	Can use sprinklers for up to three hours in the morning and evening	Use of sprinklers is not permitted. Hand held hoses and buckets can be used in the morning and evening	Watering of lawns is not permitted. Hand held hoses and buckets can be used in the morning and evening	A ban on all outdoor water use (recycling water is permitted)
Public and private ponds and garden fountains	Fountains to be switched off unless they recycle water. Small ornamental ponds may be topped up by hand held hose or bucket.	Fountains to be switched off. Small ornamental ponds may be topped up by hand held hose or bucket.	Ponds that support fish or birds may be topped up by bucket directly filled from a tap but not a hose.		
Lawns and plants at Parks, Sports Fields, Golf Courses & Public Gardens	The target of a 15 per cent reduction in water use should be met.	The target of a 25 per cent reduction in water use should be met.	The target of a 40 per cent reduction in water use should be met.	The target of a 55 per cent reduction in water use should be met.	No watering without prior written exemption.
Paved areas	Water must not be used to clean paved area unless cleaning required as a result of accident, fire, health hazard or other emergency.				
Public swimming pools	Existing pool must not be either emptied or refilled without written exemption but may be topped up. Any pool not previously filled must not be filled without written exemption.			Pools may not be filled or topped up without written exemption.	
Private swimming pools and external spas	Existing pool must not be either emptied or refilled without written exemption. Customers are encouraged to keep their pool covered when not in use. Pools may be topped up with a hand-held hose. Any pool not previously filled must not be filled without written exemption.		Pools may not be filled or topped up without written exemption.		
Water storage tanks, dams, lakes and large ornamental ponds	Must not be filled or topped up other than by recycled or non-potable water.				

Motor vehicle washing	Bucket filled directly from a tap or trigger hose used to rinse the vehicle after it has been washed. No restrictions on commercial car wash.	No washing except by commercial car wash that recycles water.	No car washing.
Window and building washing	No washing except by bucket directly filled from a tap unless cleaning required as a result of accident, fire, health hazard or other emergency.		No washing unless cleaning required as a result of accident, fire, health hazard or other emergency.
Construction activities	Unless impractical water must not be used unless by means of a trigger hose. Wherever possible non-potable water should be used.	Unless otherwise exempted in writing water must not be used unless by means of a trigger hose. Wherever possible non-potable water should be used.	

APPENDIX O. ATTRIBUTES AND LEVELS FOR THE NATURAL GAS SEGMENT

O.1. Residential Customer Segment

O.1.1. Reliability -

Number of times gas is unavailable to your home

- 4 times per year
- 2 times per year
- 1 time per year
- once every 2 years
- once every 5 years
- once every 10 years

Time of year that gas is unavailable to your home each time that it goes out

- During winter only
- Not during winter

Length of time that gas is unavailable to your home each time that it goes out

- 24 hours[86]
- 12 hours
- 8 hours
- 4 hours
- 2 hours
- 1 hour

Time of day that gas is unavailable to your home each time that it goes out

- Over the weekend
- Over a weekday[87]

---

[86] When C = 1 (24 hours), D can ONLY = code 1 (over a weekday) OR code 2 (over the weekend).

[87] Tied to C = 1

- Mon-Fri sometime after 6pm
- Mon-Fri sometime after 8am
- Mon-Fri sometime after midnight

Prior notification that gas will be unavailable to your home

- Gas unavailable due to an emergency – no notification possible
- No notification provided
- 1 day
- 2 days
- 7 days
- Two weeks

Response to phone inquiries in the event of gas becoming unavailable to your home

- Your call is answered by an AUTOMATIC VOICE - the voice gives you the option of hearing a recorded message that gives you an up-to-date status report on any gas supply issues by suburb, or to speak to someone but you may be put on hold before a person answers
- You get straight through to a PERSON - you are not put on hold and there is no machine directing you to press buttons

Total gas bill for the year

- Price attribute to be within the range –10 percent to +30 percent of the respondent's actual (estimated) bill.

O.2. Commercial Customer Segment

O.2.1. Reliability -

Number of times gas is unavailable to your premises

- 4 times per year
- 2 times per year
- 1 time per year
- Once every 2 years
- Once every 5 years
- Once every 10 years

Time of year that gas is unavailable to your premises each time that it goes out

- During winter only
- Not during winter

Length of time that gas is unavailable to your premises each time that it goes out

- 24 hours[88]
- 12 hours
- 8 hours
- 4 hours
- 2 hours
- 1 hour

Time of day that gas is unavailable to your premises each time that it goes out

- Over a weekday[89]
- Mon-Fri sometime after 8am
- Mon-Fri sometime after 6pm
- Over the weekend
- Mon-Fri sometime after midnight

Prior notification that gas will be unavailable to your premises

- Gas unavailable due to an emergency - no notification possible
- No notification provided
- 1 day
- 2 days
- 5 days
- 7 days
- Two weeks
- One month

---

[88] When C = 1 (24 hours), D can ONLY = code 1 (over a weekday) OR code 4 (over the weekend).

[89] Tied to C = 1

Response to phone inquiries in the event of gas becoming unavailable to your premises

- Your call is answered by an AUTOMATIC VOICE - the voice gives you the option of hearing a recorded message that gives you an up-to-date status report on any gas supply issues by suburb, or to speak to someone but you may be put on hold before a person answers
- You get straight through to a PERSON - you are not put on hold and there is no machine directing you to press buttons
- The gas company PERMANENTLY provides you with a SPECIAL phone number for a dedicated account manager who would handle your query - you are not put on hold and there is no machine directing you to press buttons

Total gas bill for the year

- Price attribute to be within the range of –10 percent to +30 percent of the respondent's actual (estimated) bill.

APPENDIX P. RECRUITMENT QUESTIONNAIRES

APPENDIX Q. CHOICE EXPERIMENT EXAMPLES

Q.1. Electricity Residential

Q.2. Electricity Commercial

Q.3. Water/Wastewater Residential

Q.4. Water/Wastewater Commercial

Q.5. Gas Residential

Q.6. Gas Commercial

APPENDIX R. DISCRETE CHOICE MODELS

This appendix describes the specification and estimation of the discrete choice models that are used to examine respondents' choices among scenarios. The description follows Revelt and Train (1998), to which the reader is referred for greater detail.

In each choice situation, the respondent faces a choice between ***J=2*** alternatives. Each respondent is presented a series of ***T*** such choices, called choice experiments, where ***T=8*** for the electricity reliability and quality scenarios, ***T=6*** for the water reliability, wastewater, and water restriction scenarios, and ***T=10*** for the gas reliability scenarios.

Consider one set of scenarios, such as the electricity outages scenarios. The two scenarios that the customer faces in a particular choice experiment are described in terms of various attributes, such as the frequency, length, timing, etc., of outages under that scenario. The attributes of scenario ***j*** in choice experiment ***t*** faced by respondent ***n*** are collective labelled as vector X_{njt}. The utility that respondent ***n*** obtains from scenario ***j*** in choice experiment ***t*** is:

$$U_{njt} = b_n' X_{njt} + e_{njt} ,$$

where ε_{njt} is assumed to be distributed iid extreme value independent of b_n. The coefficient vector b_n is known to the respondent but not to the researcher. This coefficient vector is specified by the researcher to have density $g(b \mid q)$, where q represents the parameters of this distribution. If b_n is specified to be the same for all respondents (i.e., a degenerate distribution), then q is its value for all respondents; however, if b_n is specified to be normally distributed over respondents, q represents the mean and covariance.

In each choice situation, the respondent chooses the scenario that provides the greater utility. Let y_{nt} denote the respondent's chosen scenario in situation ***t***, and let $y_n = (y_{n1}, ..., y_{nT})$ denote the respondent's sequence of choices in the ***T*** choice experiments. Since the e_{njt}'s are distributed extreme value, the probability conditional on b_n that the respondent chooses scenario ***i*** in situation ***t*** is standard logit (McFadden, 1973):

$$L_n(i,t \mid b_n) = \frac{e^{b_n' X_{nit}}}{\sum_j e^{b_n' X_{njt}}},$$

and since the e_{njt}'s are independent over choice experiments, the probability of the respondent's sequence of choices, conditional on b_n, is the product of logits:

$$(1) \qquad P(y_n \mid b_n) = L(y_{n1}, 1 \mid b_n) \cdot \ldots \cdot L(y_{nT}, T \mid b_n) \quad .$$

The researcher does not observe b_n, and so these conditional probabilities are integrated over all possible values of b_n, using the density of b_n,

$$P(y_n \mid q) = \int P(y_n \mid b)\, g(b \mid q)\, db \quad .$$

$P(y_n \mid q)$ is the probability of the respondent's sequences of choices conditional on the parameters of the distribution, $g(b \mid q)$. It is called a mixed logit probability, since it is a mixture of logit formulas. McFadden and Train (2000) show that any choice model can be approximated arbitrarily closely by a mixed logit with the appropriate specification of $g(b \mid q)$.

The integral in the mixed logit probability generally does not have a closed form, and so it is approximated numerically through simulation. In particular, ***R*** draws of *b* are taken from the density $g(b \mid q)$. For each draw, the product of logits in equation (***1***) is calculated, and the results are averaged over draws. The simulated probability, denoted $\tilde{P}(y_n \mid q)$, is this average:

(2) $$\tilde{P}(y_n \mid q) = \frac{1}{R} \sum_r P(y_n \mid b^r) .$$

The population parameters *q* are estimated by inserting $\tilde{P}(y_n \mid q)$ for each customer into the log-likelihood function and maximizing the function over q.

R.1. References

McFadden, D., and K. Train, 2000, "Mixed MNL Models for Discrete Response", Journal of Applied Econometrics, Vol. 15, No. 5, pp. 447-470.

Revelt, D., and K. Train, 1998, Mixed Logit with Repeated Choices: Households' Choices of Appliance Efficiency Level," Review of Economics and Statistics, Vol. LXXX, No. 4, November, pp. 647-657.

APPENDIX S. ELECTRICITY - RECRUITMENT SURVEY FINDINGS

When interpreting results of the 'recruitment survey', the following criteria has been used in accordance with standard practice in the market research, and the broader social sciences, industry:

1. Results are only presented for instances where the sample size (ie. the 'base' for the question) has a minimum of 30 respondents,[90]

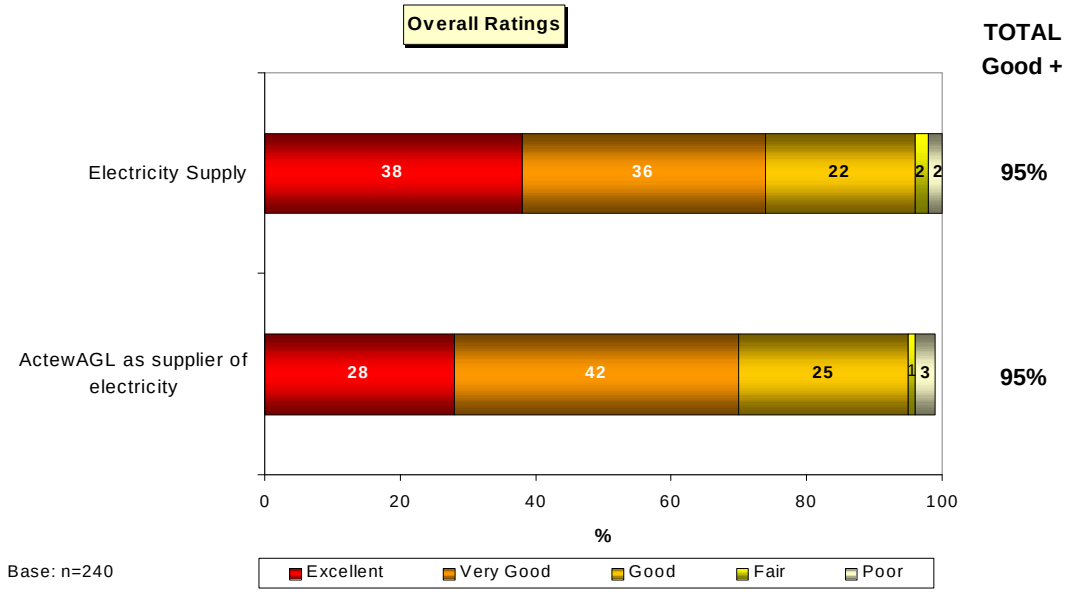
2. The term 'significant' means that results are 'statistically' significantly different as discussed in the text, at the 95% level of confidence.

Further, significant differences between subgroups have only been discussed where they have been identified as being significant; that is, the 'absence' a significant difference has not been systematically noted.

[90] Sample sizes of 30 or more are considered "reasonably large" as the sampling distributions of the sample estimates (such as means or proportions) for populations that are close to the 'normal distribution'. For a discussion of this area refer to Chapters 9 'Procedures for Drawing Probability Samples' (particularly p. 302) and 15 'Data Analysis', in Dillon, Madden & Firtle, "Marketing Research in a Marketing Environment" 1990, or any statistics text book.

S.1. Electricity Residential

S.1.1. Overall Ratings



O1. Firstly, overall how would you rate the electricity supply to the home in which you live? Would you say it was....(SINGLE RESPONSE)
O3. And overall how would you rate ActewAGL as the supplier of electricity to the home in which you live? Would you say... (SINGLE RESPONSE)

Ratings of ActewAGL as a supplier of electricity were very high with almost all respondents giving a rating of 'good' or better. 'Poor' ratings were low at 2%.

Ratings of their electricity supply were also very high with almost all respondents giving a rating of 'good' or better. The 'poor' ratings were also low at 3%.

There was a strong positive relationship between ratings of ActewAGL and ratings of the electricity supply – for example, those rating their electricity supply as 'very good' or better were more likely to rate ActewAGL as 'excellent' (36% versus 28% across all respondents).

A number of significant differences in results between subgroups were found; these are discussed below.

Ratings of electricity supply

Overall ratings of the electricity supply were related to claimed experiences with the electricity supply – the more problems with the electricity supply experienced, the poorer the overall rating of the electricity supply is likely to be, while conversely the fewer problems experienced with supply the higher the overall rating of the electricity supply is likely to be. For example:

- Customers who reported having experienced '5 or more' instances of 'lights flickering or

dimming' per annum were less likely to rate their overall electricity supply as 'good' or better (84%, versus close to 100% among those experiencing fewer than 5 such instances per annum).

- Customers who reported having experienced '2 or more' spikes or surges per annum were less likely to rate their electricity supply as 'good' or better (87%,versus 97%among those experiencing fewer spikes or surges).

- Customers who reported 'never' having experienced outages were more likely to rate their electricity supply as 'excellent' (61%, versus 32% among those claiming to have 1 or more outages per annum).

Those with underground electricity were more likely to rate their electricity supply as 'excellent' (47%) versus those with overhead power lines (32%). However, there were no other significant differences in ratings of the electricity supply between those with overhead versus underground powerlines; for example, 'good' or better ratings were in excess of 90%for both sub-segments.

Ratings of ActewAGL

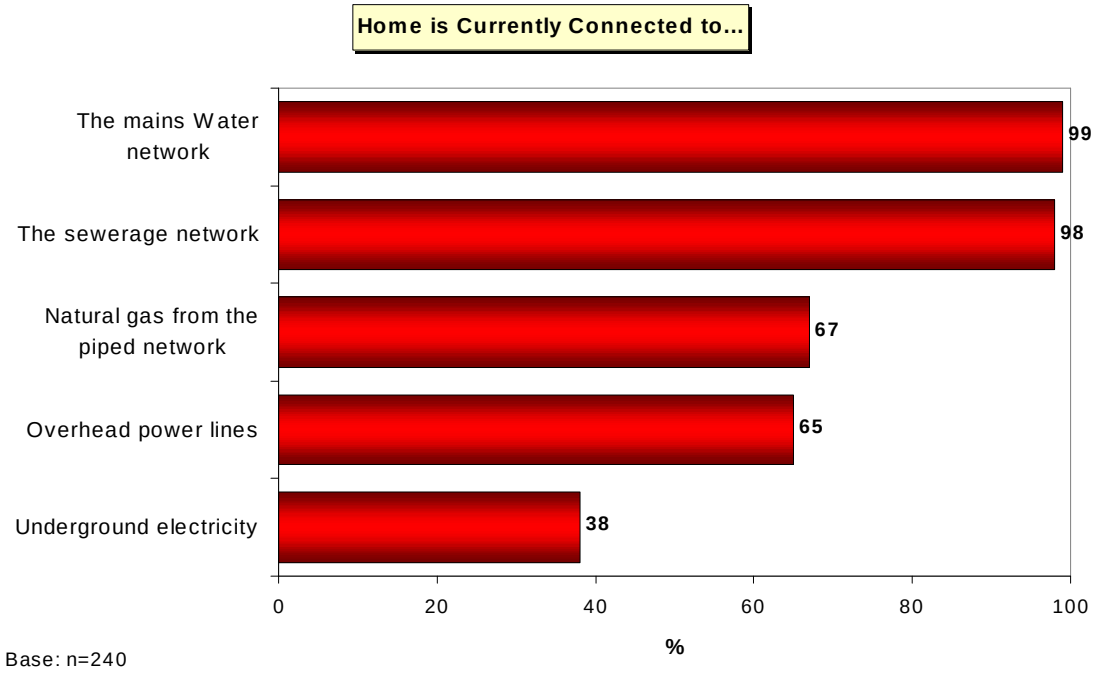
Overall ratings of ActewAGL were also related to claimed experiences with the electricity supply - the more problems with the electricity supply experienced, the poorer the overall rating of ActewAGL is likely to be, while conversely the fewer problems experienced with supply the higher the overall rating of ActewAGL is likely to be. For example:

- Customers who reported having experienced '2 or more' outages per annum were less likely to rate ActewAGL as 'excellent' (24%, versus 39% for those who reported they 'never' experienced outages).

- Customers who reported having experienced '5 or more' instances of 'lights flickering or dimming' per annum were less likely to rate ActewAGL as 'good' or better (84%, versus 98% for those who 'never' experienced such instances).

- Customers who reported having experienced '2 or more' spikes or surges per annum were less likely to rate ActewAGL as 'excellent' (13%, versus 34% for those who 'never' experienced spikes or surges).

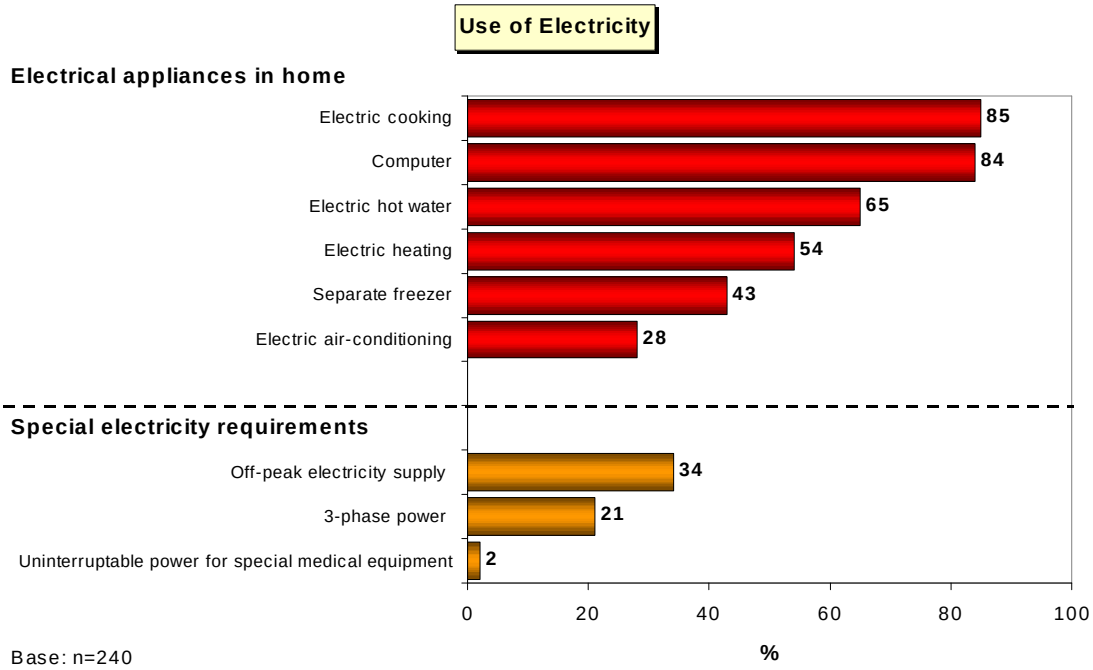
S.1.2. Behaviour



R2. Is your home currently connected to…..(MULTIPLE RESPONSE)

Almost all householders connected to the electricity supply were also found to connected to the mains water network and the sewerage network. Only two thirds (67%) however were connected to natural gas from the piped network.

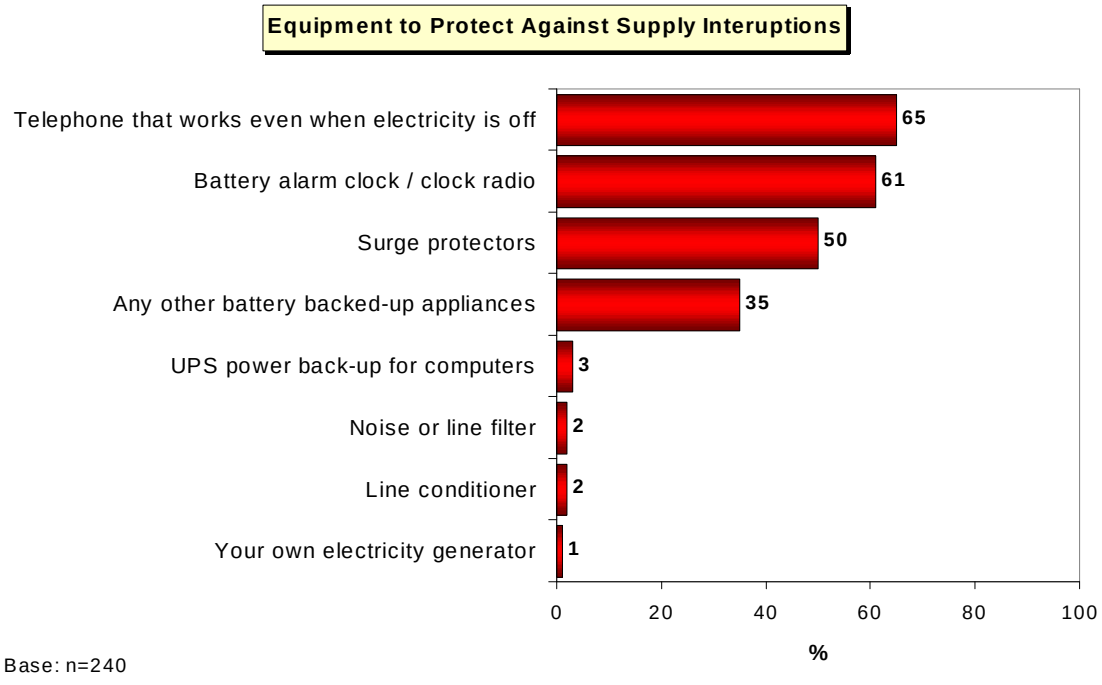
Overhead powerlines were the dominant form of electricity connection (65%).



B1. Do you have any of the following appliances in your home running on electricity? (MULTIPLE RESPONSE)
B2. Do you have any of the following special electricity requirements at your home or property? (MULTIPLE RESPONSE)

Most households used 'electric cooking appliances' (85%) and 'computers' (84%) with a further two thirds (65%) having 'electric hot water'. Just over half (54%) used electricity for 'heating' while 43% used it to run a 'separate freezer'. 28% had electric 'air-conditioning'.

In terms of special electricity requirements, one third (34%) had an 'off-peak electricity supply' and one in five (21%) claimed to have '3-phase power' installed at their home. Two percent of households claimed to require an 'uninterruptible power supply to run special medical equipment'.

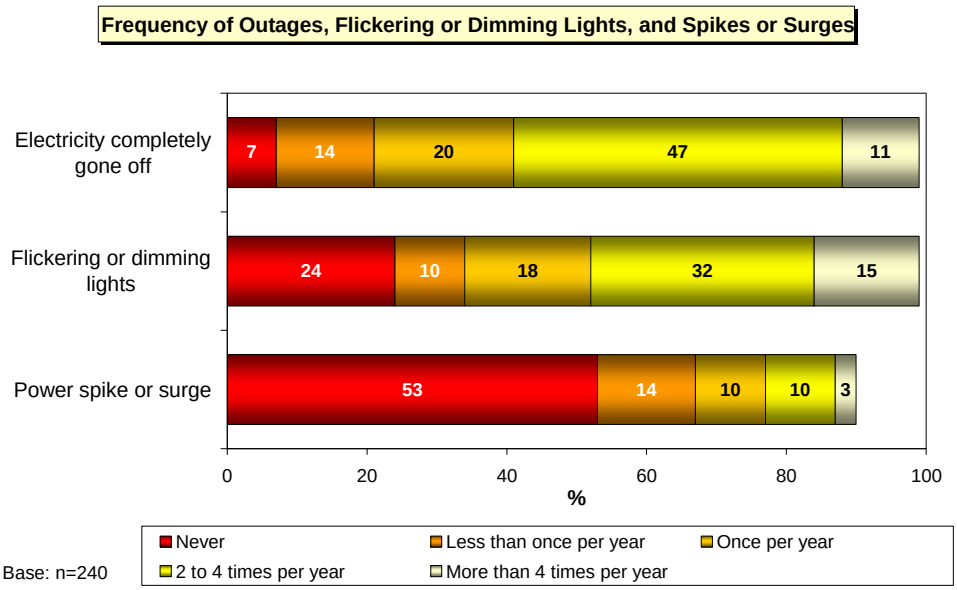


Base: n=240

B3. Do you currently have any of the following already set-up in your home to cater for occasions when something may go wrong with your electricity supply.....(MULTIPLE RESPONSE)

The main form of protection in households against power supply interruptions was the use of equipment not requiring electricity such as 'standard telephones' (65%) and 'battery run alarm clocks' (61%), or 'other battery-backed up appliances/equipment' (35%). Ownership of electric generators was very low on 1%.

In terms of 'compensating' for power fluctuations, 'surge protectors' were popular being owned by 50% of households; ownership of other forms of 'compensating' equipment (such as UPS or noise or line filters or conditioners) was rare.



B4. About how often would you say the electricity has completely gone off at your home requiring clocks to be reset? Would you say(SINGLE RESPONSE)
B5. About how often would you say you have experienced lights flickering or dimming at your home? Would you say….(SINGLE RESPONSE)
B6 About how often would you say you have experienced a power spike or surge at your home? Would you say…..(SINGLE RESPONSE)

Most households noted that they had experienced some form of disruption to their electricity supply at least once per year, with these being predominantly in the form of outages or instances of 'flickering or dimming lights'.

Perceptions of electricity completely going off

The electricity was perceived to have completely gone off '2 to 4 times' per year for about half of all households (47%); an additional 11% reported their electricity going off completely 'more than 4 times' per year. Another 20% claimed to have experienced this 'once a year' and a similar proportion (21%) 'less than once a year' or 'never'.

Those with underground electricity supply were significantly more likely to say that they 'never' experienced their electricity going off (13%) versus those with overhead powerlines (only 3% said they had 'never' experienced their electricity going off completely). Claimed outage experiences were also significantly more frequent among those with overhead power lines.

Perceptions of flickering or dimming lights

One third of households (32%) claimed that their lights flickered or dimmed '2 to 4 times' per year, with an additional 15% claiming this occurred 'more than 4 times per'. About one in five said they had this experience 'once per year' (18%) but one third (34%) claimed to only experience instances of 'flickering or dimming lights' 'less than once' per year or

'never'.

The incidence of claimed 'flickering or dimming of lights' did not differ significantly between those with underground versus overhead power.

Perceptions of power spikes or surges

Power spikes or surges were the least frequently observed type of power disruption among households; over half (53%) claimed to have 'never' experienced a power spike or surge. One in ten said that they 'did not know' whether or not their home had ever experienced this form of disruption (compared with only about 1% each for power outages or 'flickering or dimming lights'). Where spikes or surges were claimed to have been experienced, these were perceived to occur rarely with only 13% claiming to have had these at least twice per annum.

Again the claimed incidence of power spikes or surges did not vary significantly between households who had underground versus overhead power.

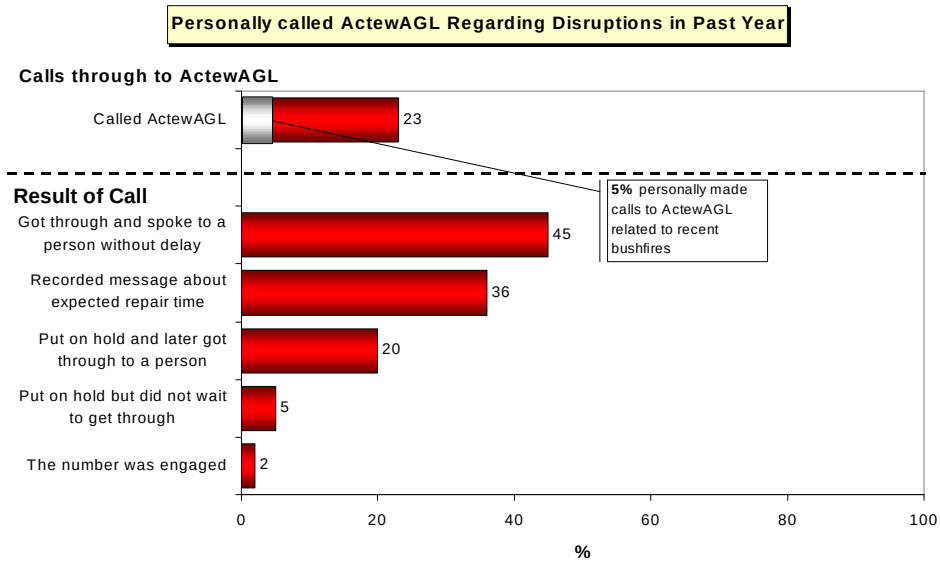
Relationships between types of electricity supply problems

Strong positive relationships existed between different types of electricity supply problems, ie. if respondents claimed to have experienced one type of problem they were much more likely to claim to experience another type of problem. For example,

- If customers said they 'never' experienced outages, they were more likely to also say they had 'never' experienced power spikes or surges (71% 'never' experienced power spikes or surges versus only 46% for those who experienced '2 or more' outages per annum).

- If customers said they 'never' experienced instances of 'lights flickering or dimming', they were more likely to say they had 'never' experienced power spikes or surges (74% 'never' experienced power spikes or surges, versus 36% for those who experienced '2 or more' instances of 'lights flickering or dimming' per annum).

S.1.3. Attitudes

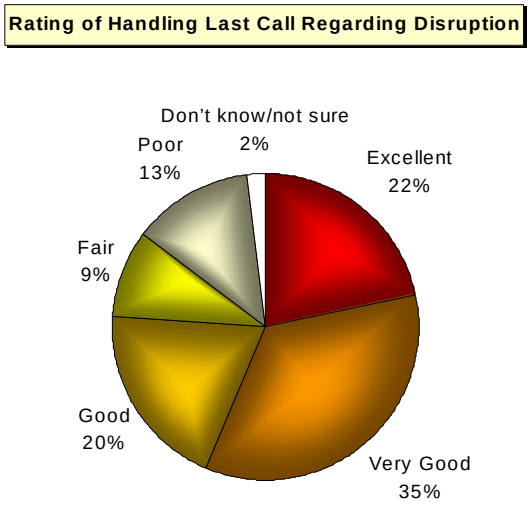


Base: Calls through to ACTEWAGL n=240; Result of call n=55

A1. Firstly, have you PERSONALLY tried to call ActewAGL to report any problems or disruptions to your electricity supply in the past year? (SINGLE RESP)
A2. Did the call you make to ActewAGL relate to the recent bushfires?... (SINGLE RESPONSE)
A3. Which of the following things happened when you called them for the last issue.....? (MULTIPLE RESPONSE)

Calls to 'report any problems or disruptions to their electricity supply' were made by 23% of households in the past year; 5% of all households made calls related to the recent bush fires.

Of those who made a call, almost half (45%) 'got through and spoke to a person without delay' whilst one third (36%) 'received a recorded message about the expected repair time'. One in five were 'put on hold and later got through to a person'. A minority, 7%, did not end up speaking to anyone or get a message about their disruption.

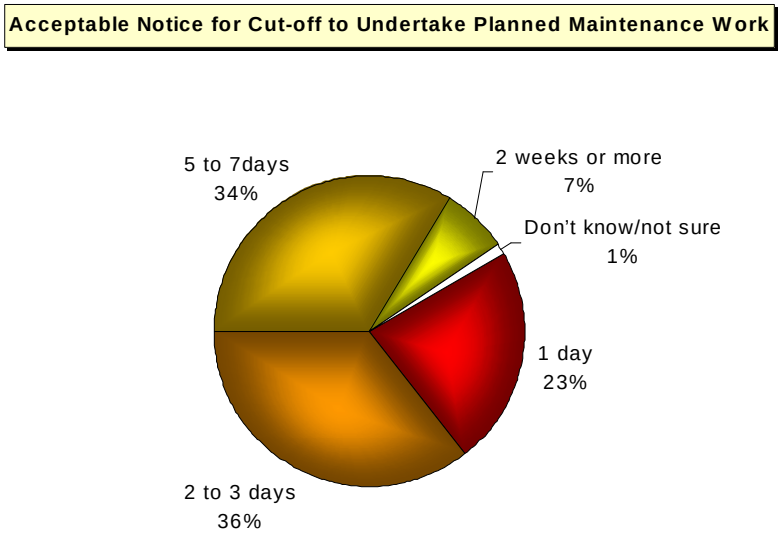


TOTAL Good + : 76%

Base: n=55

A4. And how would you rate ActewAGL in handling your call on that last occasion? Would you say.....(SINGLE RESPONSE)

Of those households who made a call about a disruption in the past year, 76% rated ActewAGL's handling of that call as 'good' or better; nearly one quarter rated the call handling as 'excellent'. However, 13% rated ActewAGL's call handling on that last occasion as 'poor'.



Base: n=240

A5. If ActewAGL needed to cut off the electricity to your home in order to do some planned maintenance work, how much notice, if any would you find acceptable? Would you say…..(SINGLE RESPONSE)

Almost all households (92%) felt that one week (or less) was 'acceptable' as the notice period for cutting off electricity to their home in order to undertake planned maintenance work. '2 to 3 days' and '5 to 7' days' were the most popular notice periods, with each being nominated by about one third of households as being 'acceptable'. However 23% said that 'one day' was enough.

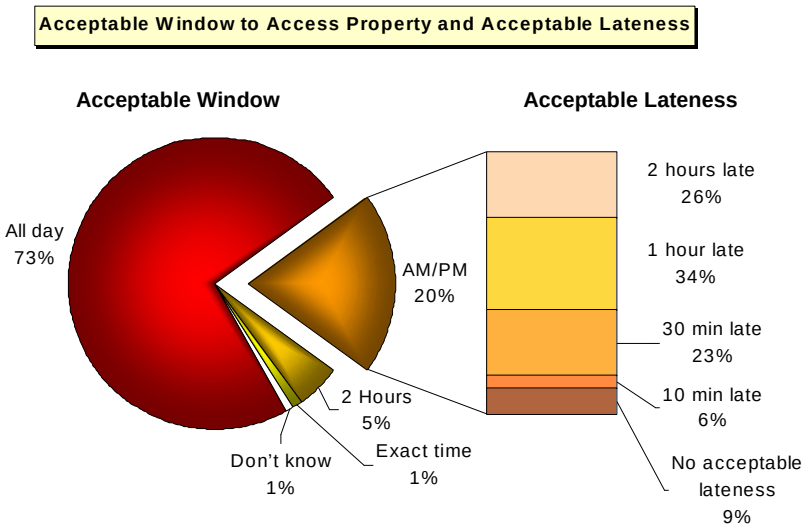
A number of significant differences in results between subgroups were identified:

- Older respondents were less demanding that younger respondents; for example, those who were '65 or older' were more likely to say that 'one day' notice was 'acceptable' (43%) compared with only 17% of those aged 'under 40'.

- Those who experienced fewer supply problems were less demanding than others; for example:

    - Those having experienced '5 or more' instances of 'lights flickering or dimming' per annum wanted a more extensive notification period with 43% nominating '5 to 7 days'.

    - Those having experienced '2 or more' spikes or surges per annum tended to want more extensive notice; 48% nominated '5 to 7 days'.



Base: Acceptable window n=240; Acceptable lateness for am/pm window n=47

A6. If ActewAGL needed access to your property to carry out some planned maintenance work, would.... be acceptable to you? (SINGLE RESPONSE)
A7. And how much after that window would you find their arrival to still be acceptable to you? (SINGLE RESPONSE)

'All day' was considered an 'acceptable' window to access property (to carry out planned maintenance work) by most households (73%). A further one in five thought a 'morning/afternoon' window to be 'acceptable'.

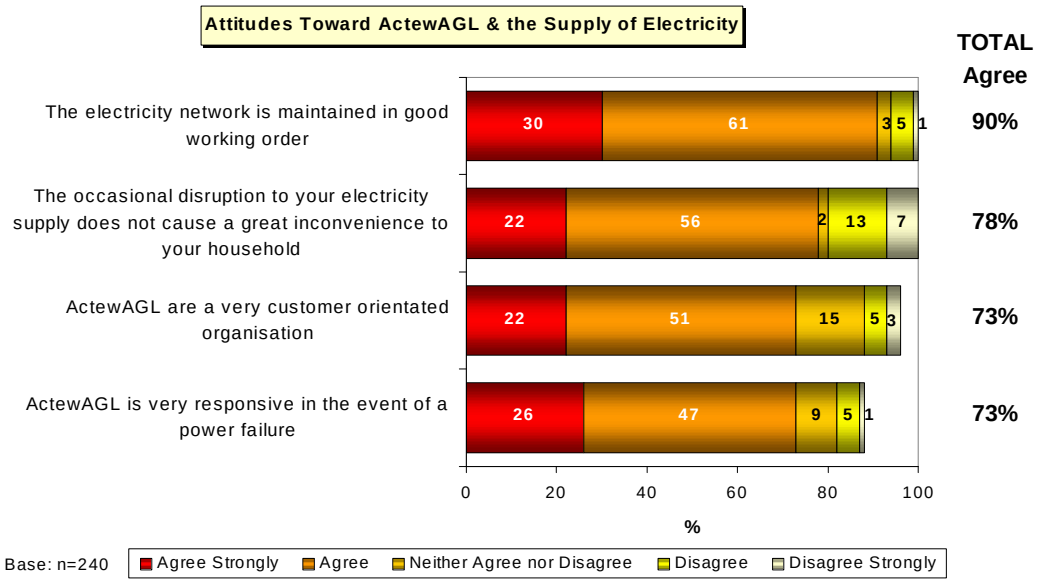
Older respondents were again found to be less demanding that their younger counterparts. For example, those in the '65 or older' age group were more likely than younger respondents to regard 'all day' as an 'acceptable' window (92%).

All those who considered a window smaller than an entire day to be 'acceptable' notification for property access, were also asked about the amount of 'lateness' they would accept in meeting that window. Of those stipulating a 'morning/afternoon' window[91] (47 respondents), almost all (91%) considered some amount of lateness to be 'acceptable', although the amount of lateness varied widely:

- 23% considered '30 minutes late' to be 'acceptable',
- 34% considered '1 hour late' 'acceptable', and
- 26% considered '2 hours late' 'acceptable'.

[91] Sample sizes were too small to analyse 'acceptable lateness' windows among those choosing appointment windows other than 'morning/afternoon'.

Respondents rated their level of agreement with seven aspects of ActewAGL's service. The four aspects with the most favourable results are shown and discussed below, with results for the remaining three aspects shown and discussed next.



A8. I am now going to read out some statements about household electricity supply, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that…..[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree (SINGLE RESPONSE)

Electricity network maintained in good working order

The electricity network was believed to be 'maintained in good working order' by almost all respondents, with 90% 'agreeing' with this statement; this was the best performing aspect of ActewAGL's service of the seven aspects tested. Only a 'total' of 5% 'disagreed'.

With regard to the statement 'the electricity network is maintained in good working order' those more favourably disposed toward ActewAGL and those experiencing fewer supply problems, rated this statement more favourably. For example:

- Those who rated ActewAGL as 'very good' or better were more likely to 'agree strongly' (36%).

- Customers who 'never' experienced instances of 'lights flickering or dimming' were more likely to 'agree strongly' (39%), while those who experienced such instances '5 or more' times per annum were much less like to 'agree strongly' or to 'agree' (70%).

Perceptions of occasional disruptions to electricity supply

Occasional disruptions to the electricity supply was 'not considered to cause a great inconvenience' to most households (78%); however 19% of households 'disagreed'.

The following significant differences in results between subgroups were identified:

- Those least likely to claim to be disrupted were those that rated their electricity supply and ActewAGL particularly favourably, and childless households. Specifically:
    - Those who rated their electricity supply as 'very good' or better (84% 'agreed' or 'agreed strongly' with the statement).
    - Those who rated ActewAGL as 'very good' or better (83% 'agreed' or 'agreed strongly' with the statement)
    - Households without children (84% 'agreed' or 'agreed strongly' with the statement).

Perceptions of ActewAGL as a very customer orientated organisation

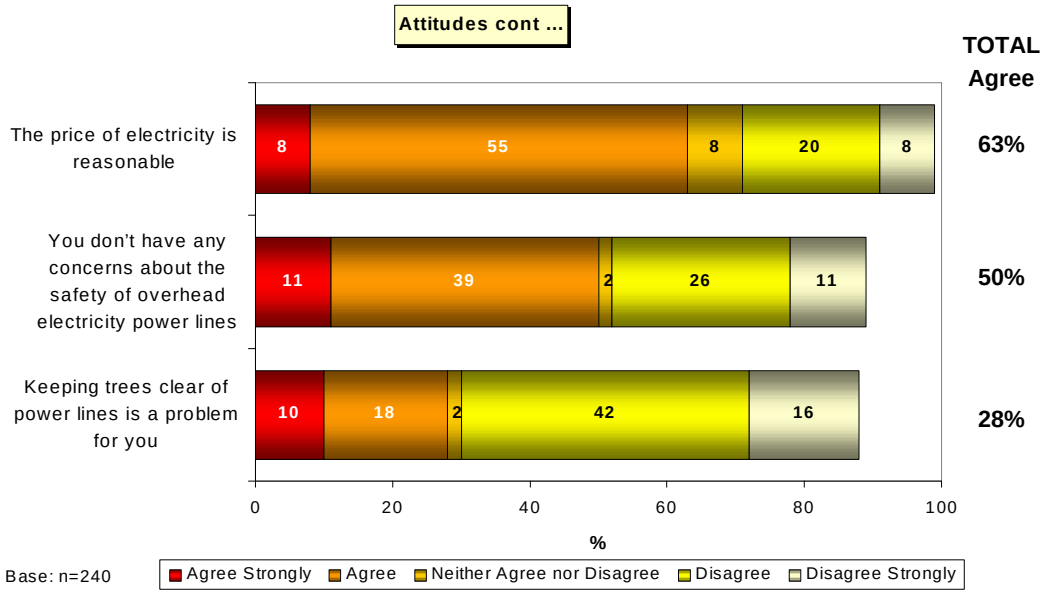
Just under three quarters of respondents 'agreed' that 'ActewAGL are a very customer orientated organisation' (73%); 'total disagreement' was 8%.

A number of significant differences in results between subgroups were found. Those most likely to rate ActewAGL favourably in relation to being a 'very customer oriented organisation' were those most favourably disposed to ActewAGL and their electricity supply overall, as well as those claiming to have experienced few supply problems. Specifically:

- Customers who rated their electricity supply as 'very good' or better, and those who rated ActewAGL as 'very good' or better, were more likely to 'agree strongly' that 'ActewAGL are a very customer oriented organisation' (28% and 30% respectively).
- Customers who 'never' experienced outages were more likely to 'agree' or 'agree strongly' that 'ActewAGL are a very customer oriented organisation' (82%).
- Customers who 'never' experienced instances of 'lights flickering or dimming' were more likely to 'agree strongly' (33%).
- Customers who experienced spikes or surges 'less than once' per annum were more likely to 'agree strongly' (36%).

Perceptions of ActewAGL as very responsive in the event of a power failure

Just under three quarters of respondents 'agreed' that 'the organisation is very responsive in the event of a power failure' (73%). Those rating ActewAGL as 'very good' or better were much more likely to 'agree' or 'agree strongly' (79%) than were others.



A8. I am now going to read out some statements about household electricity supply, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that…..[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree (SINGLE RESPONSE)

Perceptions of the price of electricity

The 'price of electricity was considered to be reasonable' by just under two thirds (63%) of respondents; however a net total of 27% disagreed. Eight percent said they 'neither agreed nor disagreed'.

With regard to perceptions that 'the price of electricity is reasonable', subgroups most likely to agree were those favourably disposed to ActewAGL and the electricity supply overall, as well as older age groups, childless households, and those with smaller 'electricity bills' and those entitled to a discount. Specifically:

- Those who rated their electricity supply as 'very good' or better were more likely to 'agree' or to 'agree strongly' (69%).
- Those who rated ActewAGL as 'very good' or better were more likely to 'agree' or to 'agree strongly' (72%).
- Those in the '65+' age group were more likely to 'agree' or to 'agree strongly' (81%) than

younger age groups.

- Those with 'no children' in the household were more likely to 'agree' or to 'agree strongly' (70%).

- Those with a bill size of less than $700 were more likely to 'agree strongly' or to 'agree' (77%).

- Those entitled to a discount off their electricity bill were also more likely to 'agree strongly' (19%) than those not eligible for the discount (6%).

Further, perceptions of 'the price of electricity as reasonable' related to supply experiences such that those who 'never' had supply problems were more likely to believe that the price was indeed reasonable. Specifically:

- Customers who 'never' experienced outages were more likely to 'agree strongly' that 'the price of electricity is reasonable' (18%).

- Customers who 'never' experienced instances of 'lights flickering or dimming' were more likely to 'agree strongly' or 'agree' (74%).

- Customers who 'never' experienced spikes or surges were more likely to 'agree strongly' or to 'agree' (69%).

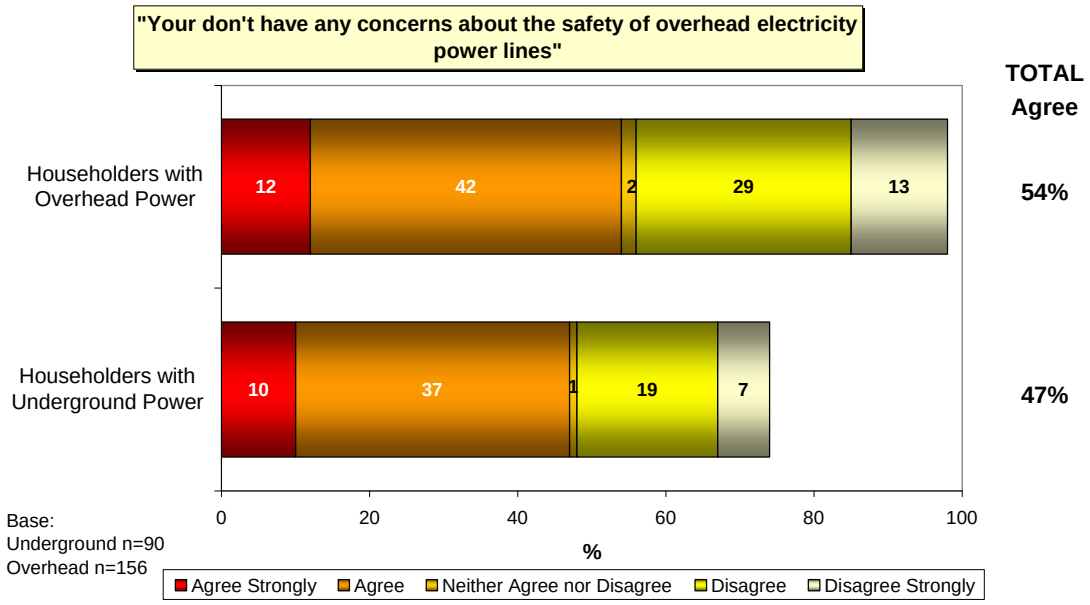
Concerns about the safety of the overhead electricity power lines

Half of those interviewed 'agreed' they 'had no concerns about the safety of overhead electricity powerlines'. While another 10% noted that this issue was 'not applicable' to them, 37% 'disagreed' with this statement (11% 'strongly').

Concern was significantly more likely among those with children in the household and those with overhead power:

- Customers with no children were more likely to 'agree' or 'agree strongly' that they 'don't have any concerns about the safety of the overhead electricity power lines' (58%) compared with those with children (42%).

- Total 'disagreement' was higher among households with overhead power (42%) compared households with underground power (26%). Details are illustrated overleaf:



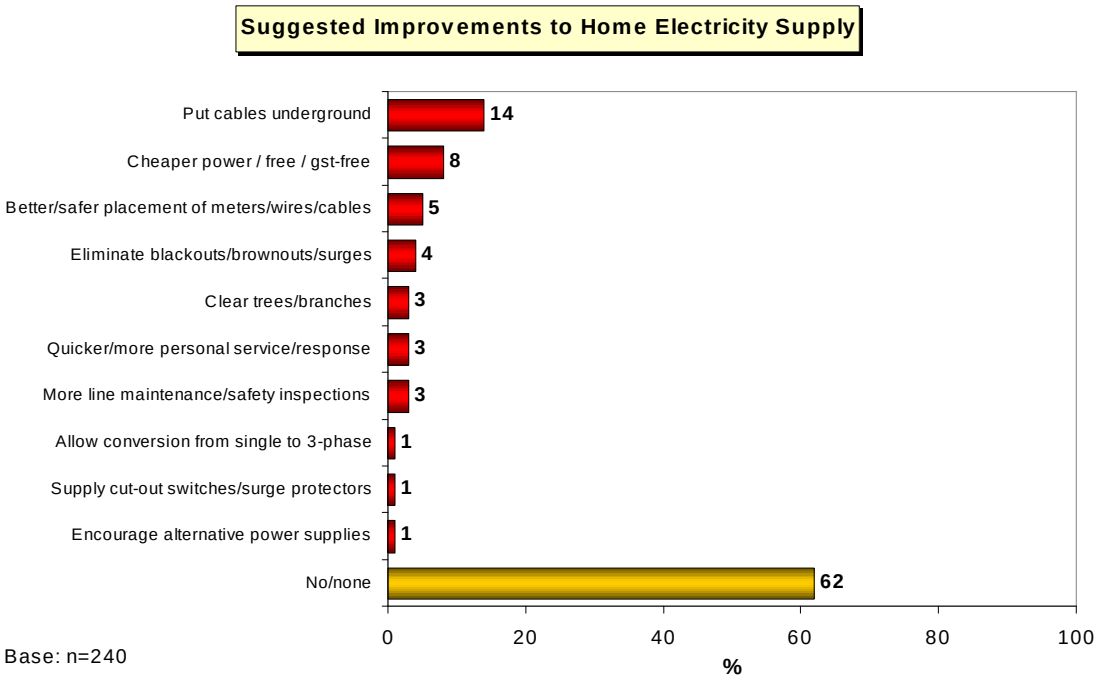
A8. I am now going to read out some statements about household electricity supply, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that…..[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree (SINGLE RESPONSE)

Among those with underground power, 27% noted that the issue of 'safety concerns in relation to overhead power lines' was 'not applicable' to them.

Perceptions of keeping trees clear of powerlines

Just over a quarter (28%) said that 'keeping trees clear of powerlines was a problem for them'; 10% 'agreed strongly'. Nearly six in ten (58%) disagreed with this statement, with another 12% saying this statement was 'not applicable' to them.

With regard to keeping trees clear of powerlines, those who said they had experienced '2 or more' instances of 'lights flickering or dimming' per annum were much more concerned about trees (35%) than those who had 'never' experienced such instances (19%).



A9. Are there any improvements that you would like to to see made to the electricity supply to your home?

'No' improvements to the electricity supply to their home was considered necessary by most respondents (62%). A total of 81% of those with underground electricity said 'no improvements' were necessary (compared with 51% for those with overhead power).

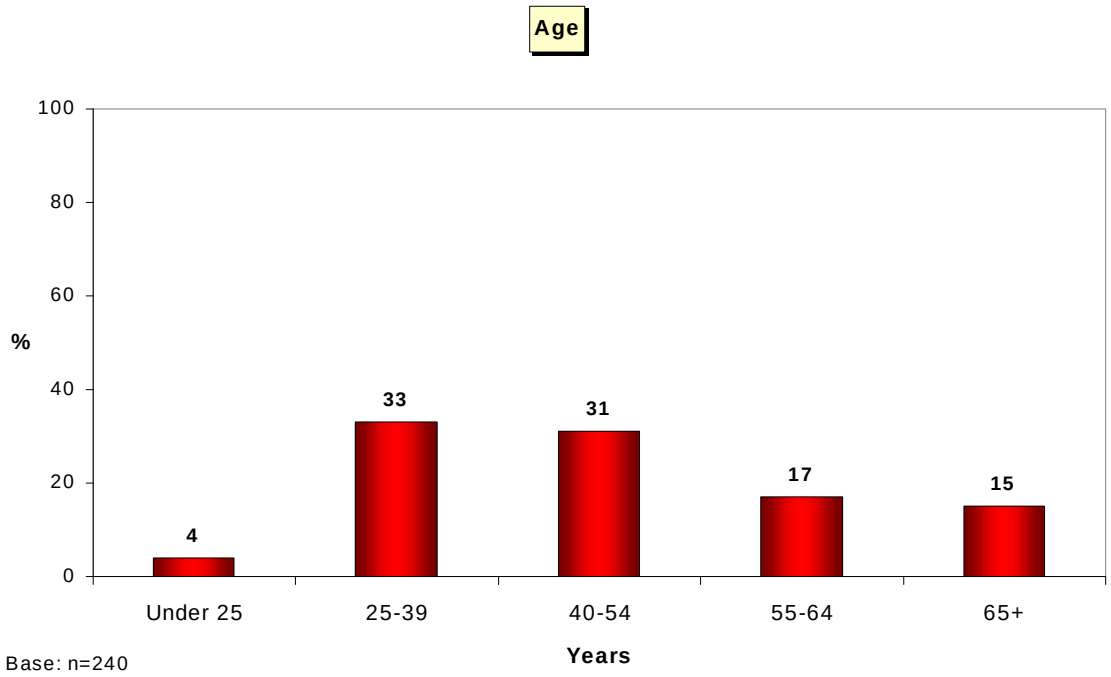
The only suggested improvement made by more than one in ten respondents related to 'putting cables underground' (14%). In fact, 22% of those with overhead powerlines, when asked what improvements to supply were required, said 'put cables underground'.

Price related issues were spontaneously raised by 8% of respondents, and safety related issues by 5%.

S.1.4. Respondent Profile

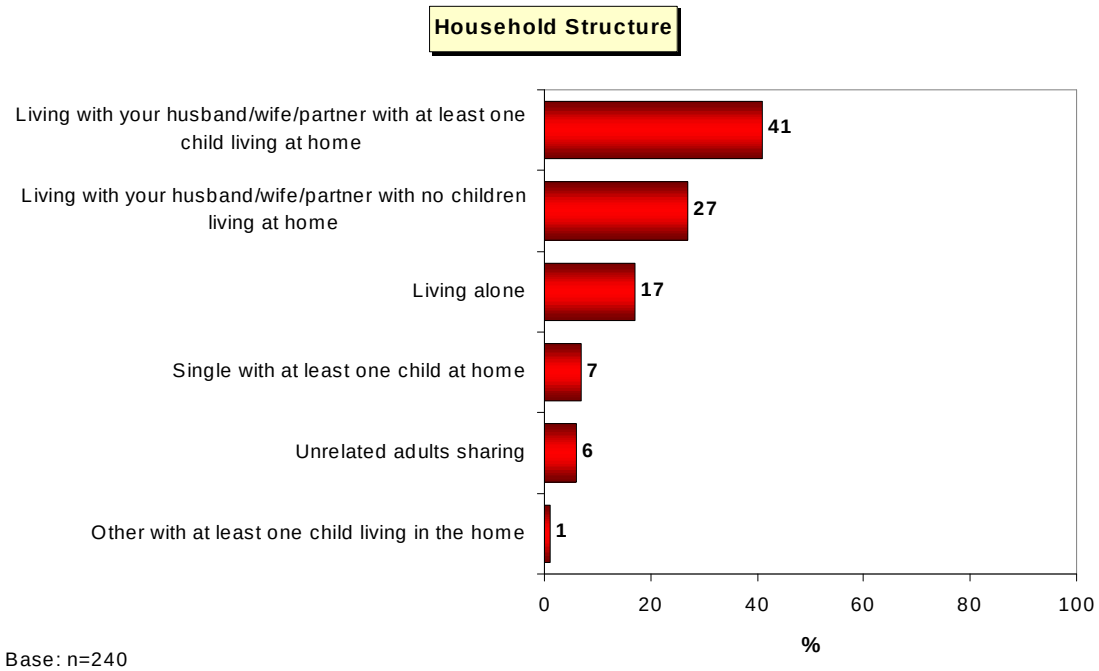
D3. Do you currently Rent, Own, or have a Mortgage on the home in which you live? (SINGLE RESPONSE)

A total of 61% of respondents were females. A total of 38% owned their home outright and a further 42% were home owners with a mortgage. An additional 19% were renting.



D2. First can you tell me into which of the following age groups you belong? (SINGLE RESPONSE)

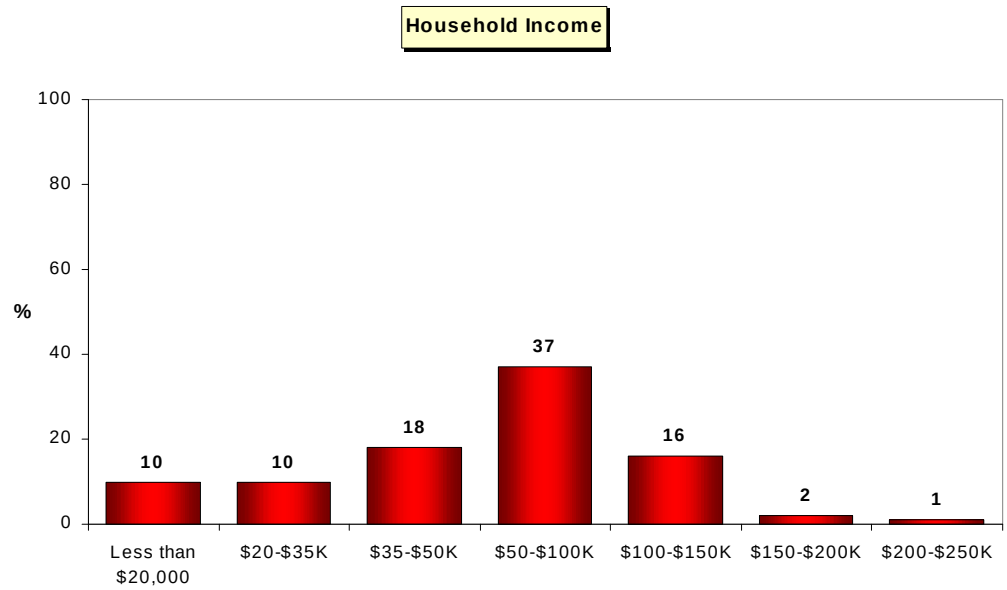
Approximately one third of respondents were in each of the 25-39 and 40-54 age groups, with almost all the remainder aged 55 or over.



Base: n=240

D4.And which of these best describes your household? (SINGLE RESPONSE)

About two thirds of respondents shared their home with an adult partner, most of these also having at least one child living in the home, whilst 17% lived alone.

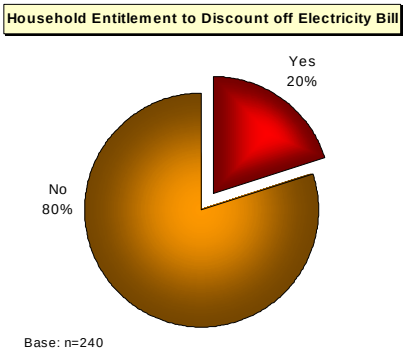


Base: n=240

D5. [Single adult households] Would your personal income from all sources before tax be under $100,000 or over $100,000? Would that be... (SINGLE RESPONSE)

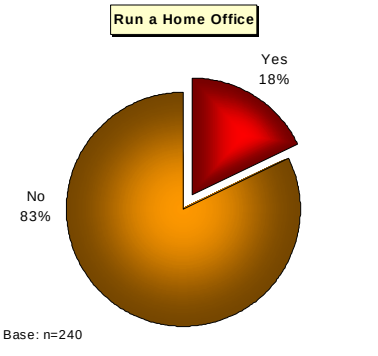
D5. [Partnered adult households] Would the combined income of yourself and your wife/husband/partner from all sources before tax be under $100,000 or over $100,000? Would that be... (SINGLE RESPONSE)

The majority of households had incomes in excess of $50,000 per annum.



Base: n=240

D6. Is your household currently entitled to any type of discount off your electricity bill? (SINGLE RESPONSE)



Base: n=240

D7. Do you or your wife/husband/partner currently run a home office from your home? (SINGLE RESPONSE)

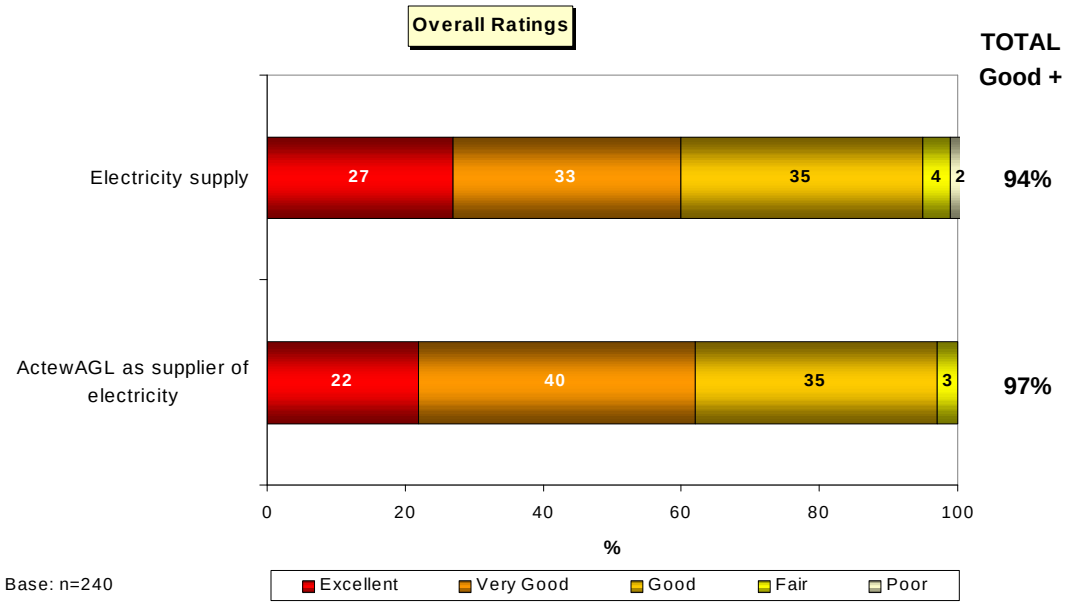
Twenty percent of households were entitled to a discount off their electricity bill, and 18% had a member of the household running a home office from the home.

S.2. Electricity Commercial

In order to assist with analysis and interpretation of differences between industry subgroups, industries were grouped into five industry sectors to provide subgroups of sufficient sample size. These included the following:

- Services – comprising Australian Bureau of Statistics (ABS) segments including 'property and business services', 'finance & insurance', 'personal & other services'
- Sales – comprising ABS segments including 'retail trade' and 'wholesale trade'
- Grow / Build - comprising ABS segments including 'construction', 'manufacturing', and 'agriculture, forestry, fishing & mining'
- Government & Infrastructure - comprising ABS segments including 'transport & storage', 'communication services', 'government administration', 'education' and 'health & community'
- Hospitality - comprising ABS segments including 'accommodation & restaurants' and 'cultural and recreational'

S.2.1. Overall Ratings



O1. Firstly, overall how would you rate the electricity supply to your site? Would you say it was....(SINGLE RESPONSE)
O3. And overall how would you rate ActewAGL as the supplier of electricity to your site? Would you say ... (SINGLE RESPONSE)

Overall, ActewAGL was rated favourably by its business customers; almost all rated the organisation as 'good' or better (97%), with over one fifth rating it as 'excellent'; none rated it as 'poor'. The electricity supply was also rated favourably, with 94% of organisations rating it 'good' or better, and the 'poor' score was a very low 2%. The proportion of 'excellent' ratings was high on 27%.

In fact ratings of the electricity supply were found to be related to ratings of ActewAGL:

- Organisations that rated their electricity supply as 'excellent' were much more likely to also rate ActewAGL as 'excellent' (66%, versus 4% who rated their electricity supply as just 'good').

- Those rating their electricity supply as 'very good' or higher were much more likely to also rate ActewAGL as 'very good' or higher (87% versus only 29% of those who rated their electricity supply as only 'good').

Significant differences in results between subgroups were identified as follows:

Perceptions of the electricity supply

- The 'government & infrastructure' sector was more favourably disposed toward the electricity supply than was any other industry sector. For example, 77% of the 'government & infrastructure' sector rated their electricity supply as 'very good' or

better compared with a maximum of 59% for any other industry sector.

- There was a strong relationship between ratings of electricity supply and claimed customer experiences of outages, voltage dips, and spikes or surges, in that customers who said they had not experienced these were more likely to provide favourable ratings of their electricity supply overall than those claiming they had experienced problems. Specifically:

    - Organisations claiming to have experienced '2 or more' outages per annum were more likely to rate their electricity supply as only 'fair' or 'poor' (15% versus 2% for those who say they have 'never' experienced outages). They were less likely to rate their electricity supply as 'good' or higher (85% versus 98% for those who saying they have 'never' experienced outages).

    - Organisations who say they had experienced '5 or more' voltage dips per annum were more likely to rate their electricity supply as only 'fair' or 'poor' (17% versus 3% for those who say they have 'never' experienced such instances). Conversely they were also less likely to rate their electricity supply as 'good' or better (83% versus 97% for those who claim to have 'never' experienced voltage dips).

Perceptions of ActewAGL as a supplier of electricity

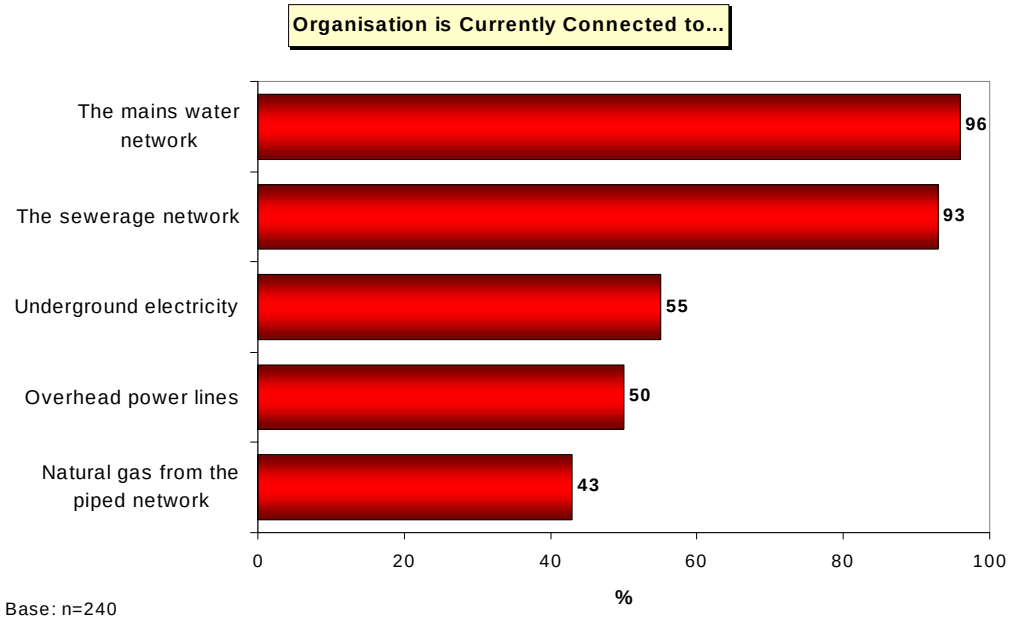
- As was the case for ratings of the electricity supply, it is the 'government & infrastructure' sector that is more favourably disposed toward ActewAGL than any other industry sector. Specifically, 'government & infrastructure' sector organisations were more likely to rate ActewAGL as 'very good' or higher (77%) than was any other industry sector (eg. 63% was the highest level of 'very good' or better rating given by another sector).

- Again there was a strong relationship between ratings of ActewAGL as a supplier of electricity, and customer experiences of outages and voltage dips such that fewer problems experienced were associated with more favourable ratings of ActewAGL. For example:

    - Those who had experienced '2 or more' outages per year were much less likely to rate ActewAGL as 'excellent' (13% versus 29% for those who had 'never' experienced them), and were much less likely to rate ActewAGL as 'very good' or higher (50% versus 71% who had experienced 'less than one' per annum).

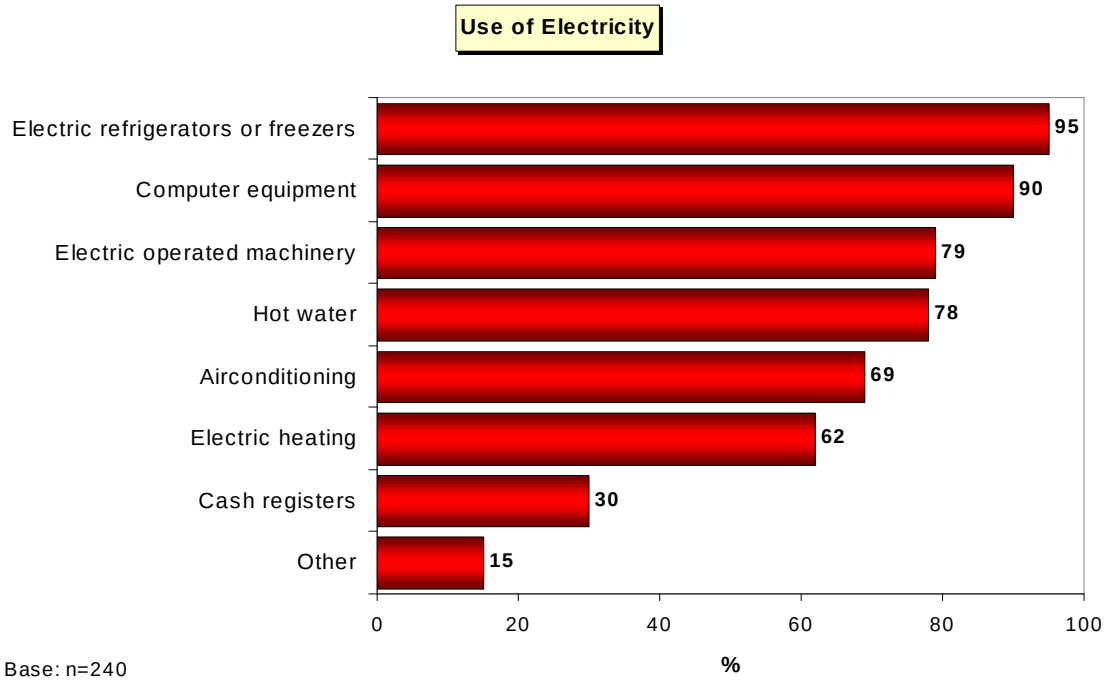
    - Those who had experienced '5 or more' voltage dips per annum were less likely to rate ActewAGL as 'excellent' (7% versus 26% for those who 'never' experienced them), or as 'very good' or higher (50% versus 83% for those organisations who had only experienced 1 voltage dip per annum).

S.2.2. Behaviour



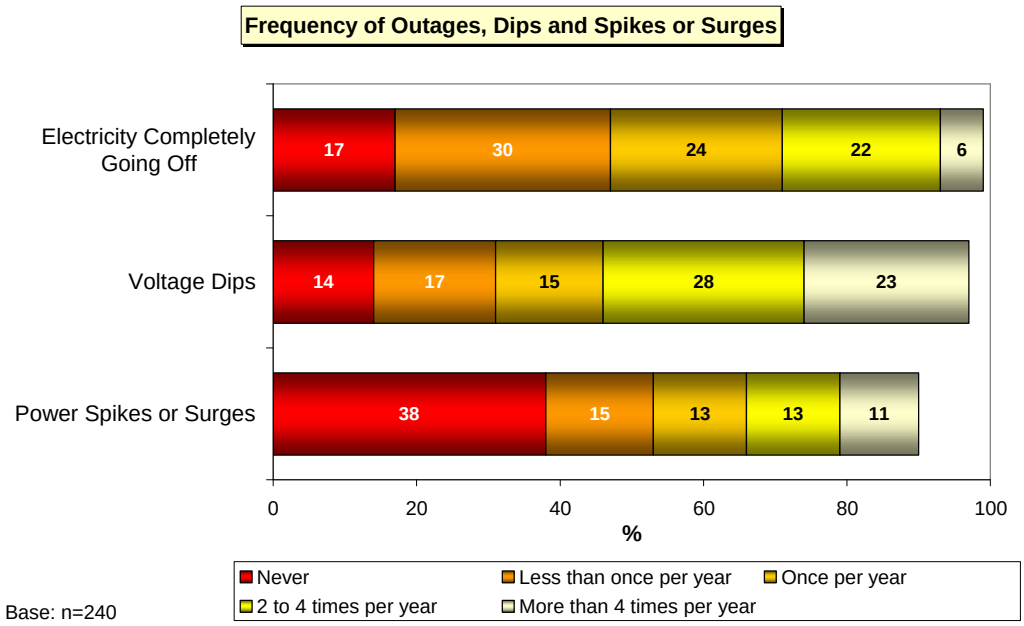
R1. Is your organisation either at this site or any other site you may have in the ACT currently connected to….. (MULTIPLE RESPONSE)

Almost all organisations connected to the electricity network were also found to be connected to the mains water and sewerage networks. Around half had sites connected to either underground or overhead powerlines. Connection to natural gas through the piped network was considerably lower, with under half being connected (43%).



B1. Is electricity used for any of the following purposes at your site? (MULTIPLE RESPONSE)

Most organisations utilised electricity to run 'refrigerators or freezers' and for 'computer equipment'. Electricity usage for 'operating machinery', 'hot water' and 'air conditioning' was at 79%, 78% and 69% of all organisations respectively. Almost two-thirds (62%) also used electricity for heating. Other uses were much less prevalent.



Base: n=240

B2. About how often would you say the electricity has completely gone off at your site? Would you say.....(SINGLE RESPONSE)

B7. About how often would you say you have experienced dips in electricity voltage at your site? These dips often cause lights to flicker or dim? Would you say....(SINGLE RESPONSE)

B8. About how often would you say you have experienced a power spike or surge at your site? Would you say.....(SINGLE RESPONSE)

Outages were claimed to have been experienced 'less than once per year' or 'never' by almost half of all the organisations interviewed. A total of 38% said they had 'never' experienced spikes or surges. Relative to outages and spikes or surges, organisations said they experienced voltage dips much more frequently, with about half claiming to have had voltage dips 'twice a year or more frequently'.

A number of significant differences between subgroups were identified. Supply disruptions were more likely be reported by those with overhead power, home-based businesses, multi-site (larger) businesses and those with back-up equipment in place. Specifically :

- Those organisations with underground electricity were more likely to say they had 'never' had the electricity go off completely (24%, versus 8% for those connected to overhead electricity).

- Home office based organisations reported more frequent outages (an average of 1.7 versus 1.1 per annum) as well as voltage dips (on average 2.6 versus 2.1 for other businesses).

- Multi-site organisations reported experiencing spikes or surges more frequently than others (on average 1.9 versus 1.2 for single site organisations).

- Those who said they had backup equipment in place reported more frequent outages

(an average of 2.1 interruptions per annum versus 1.3 for those with no backup) as well as a higher frequency of spikes or surges (2.1 on average per annum versus 1.1 for those without backup equipment).

Customers claiming that they tended to experience one type of problem also tended to claim that they experienced other types of problems, viz.,

- Those who said that they 'never' experienced outages were more likely to also say they 'never' experienced voltage dips (32%, versus 3% for those who experienced '2 or more' outages per annum).

- Those claiming to have experienced '2 or more' spikes or surges per annum also claimed to experience more frequent voltage dips (on average 3.6 versus 1.5 for those who 'never' experienced spikes or surges). A higher frequency of perceived voltage dips was positively related to the perceived frequency of spikes or surges (for those reporting '5 or more' voltage dips per annum, on average the reported number of spikes or surges was 2.8 versus only 0.3 for those who said they 'never' experienced such instances).

- Organisations claiming to experience more frequent outages also tended to report more frequent spikes or surges (on average 2.4 spikes or surges per annum for those reporting '2 or more' outages per annum versus an average of 0.8 spikes or surges per annum for those reporting they 'never' experienced outages).

Also, there was a relationship between claimed experiences of problems with the electricity supply and overall ratings of the electricity supply, and also with overall ratings of ActewAGL – those experiencing problems are not as favourably predisposed toward the electricity supply or ActewAGL. Specifically:

- Those who rated their electricity supply as 'excellent' reported less frequent interruptions to their supply (on average 0.8 interruptions per year versus an average of 1.6 interruptions per year for those who rated their electricity supply as only 'good').

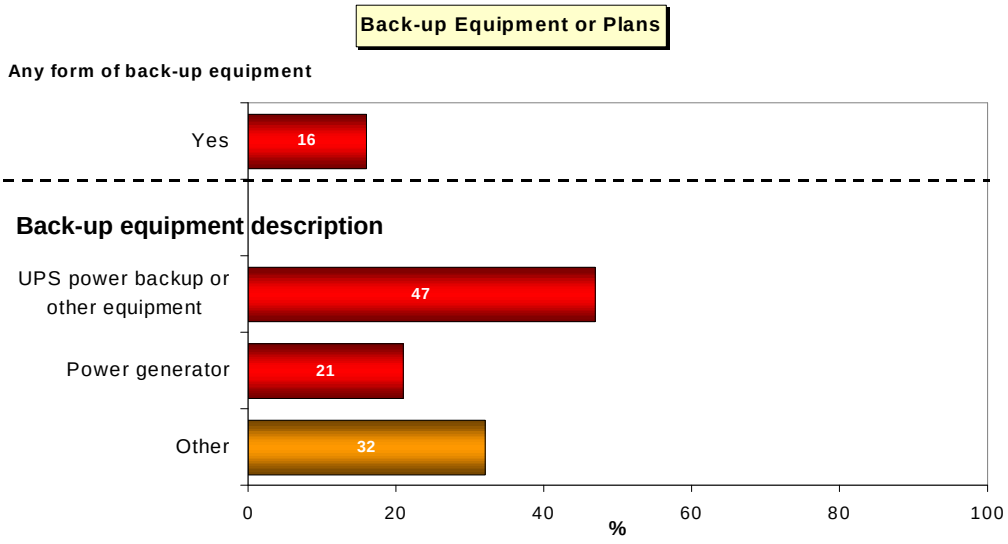
- Those who rated ActewAGL as 'excellent' reported less frequent interruptions to their supply (on average 0.9 interruptions per year versus an average of 1.6 interruptions per year for those who rated ActewAGL as only 'good').

- Those rating their electricity supply as 'excellent' reported less frequent voltage dips (on average 1.3 versus 2.6 for those who rated their electricity supply as only 'good').

- Those rating ActewAGL as 'excellent' also reported less frequent voltage dips (on average 1.6 versus 2.5 for those who only rated ActewAGL as only 'good').

- Those rating ActewAGL as 'excellent' or 'very good +' reported a lower frequency of spikes or surges than those only rating ActewAGL as only 'good' (0.7 and 0.9

respectively versus an average of 1.8 spikes or surges for those rating ActewAGL as only ‘good’).



Base: Any form of backup equipment n=240; Backup equipment description n=38

B3. Do you have <u>any form</u> of back-up equipment or back-up plan already in place in case the electricity supply was completely turned off at your site? (SINGLE RESPONSE)

B4. Can you briefly describe your back-up equipment or back-up plans for me? (MULTIPLE RESPONSE)

Sixteen percent of organisations considered that they had some form of back-up equipment or back-up plan in place for their electricity supply. Of those noting that they did indeed have a back-up, a 'UPS power backup for the computer or for other equipment' was the most common form mentioned (47%, translating to about 7.5% of <u>all</u> organisations), with a further 21% mentioning a power generator (translating to about 3% of <u>all</u> organisations).

Note that when respondents were 'prompted' by being asked specifically regarding ownership of UPS equipment, 21% of all organisations responded affirmatively (compared with the 7.5% noted above) suggesting that many may be taking the existence of this equipment and its function as a power back-up and voltage control for granted.

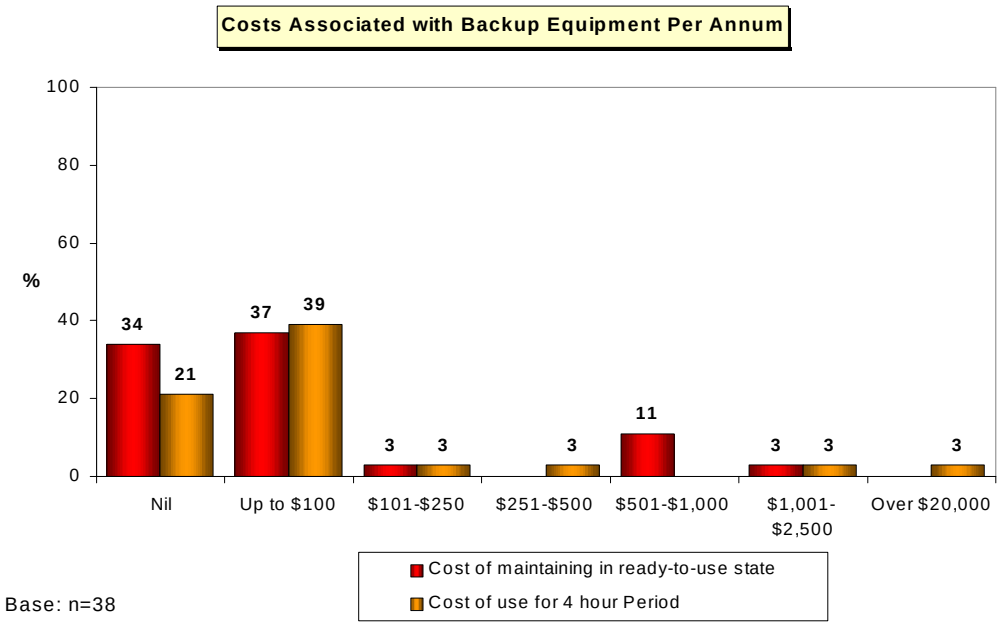
Significant differences between subgroups identified were:

- The 'grow/build' industry sector was more likely to note having power backup (29%) and the 'sales' and 'services' sectors were least likely (11% each).

- Organisations claiming to be experiencing more frequent outages were more likely to have backup equipment/plans (26%, versus 17% for those who 'never' experienced outages), as were those claiming to be experiencing '5 or more' voltage dips per annum (28%, versus 6% for those who 'never' experienced outages).

A range of 'other' back-up equipment or plans were mentioned, viz, 'torches', 'backing up

the computer at the end of the day', 'file server kept off site', 'gas lighting and gas burner', 'batteries on essential equipment', 'gas BBQ', 'candles', and 'plan to hire diesel generators'.



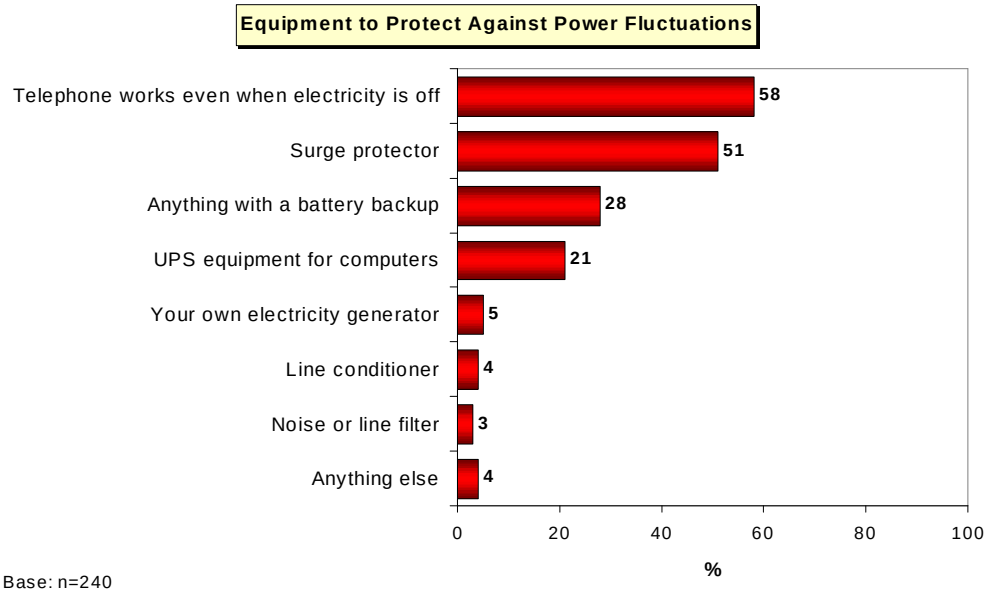
B5. Ignoring the initial purchase and set up costs of the back-up equipment or plan, about how much does this back-up equipment or plan cost you per year to maintain ready to use if needed....(SINGLE RESPONSE)

B6. And what about the cost each time that back-up equipment or plan is actually used for a period of 4 hours?..(SINGLE RESPONSE)

Among those with electricity supply back-up equipment, the per annum maintenance costs tended to be nil or else were very small (up to $100) for the majority (71%). However one in ten of these organisations stated their maintenance costs were between $501 and $1,000, with an additional 3% nominating between $1,001 and $2,500.

It is important to note that these costs do not include initial purchase or set-up costs.

The cost per usage occasion of up to 4 hours was also low, either nil or up to $100 for the majority.



Base: n=240

B9. Do you currently have any of the following equipment connected at your site to protect equipment from power fluctuations?..(MULTIPLE RESPONSE)

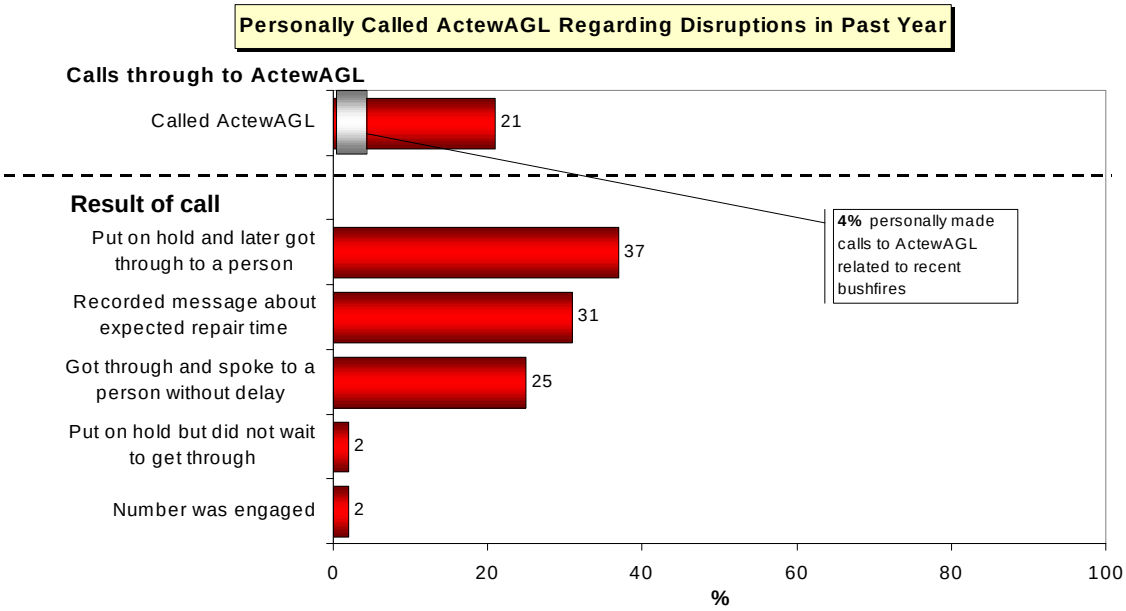
Telephones worked 'even when the electricity was turned off' for nearly 60% of the organisations interviewed.

(As already discussed above) one in five confirmed that they protected their computers with UPS equipment .

About half confirmed use of 'surge protectors' and 28%of 'battery backups'.

Other types of equipment for protection from power fluctuations were not used by large proportions of organisations; for example, 5% confirmed having their own power generator.

S.2.3. Attitudes



Base: Calls through to ActewAGL n=240; Result of call n=51

A1. Firstly, have you PERSONALLY tried to call ActewAGL to report any problems or disruptions to your electricity supply in the past year? (SINGLE RESPONSE)

A2. Did the call you make to ActewAGL relate to the recent bushfires? (SINGLE RESPONSE)

A4. Which of the following things happened when you called them for the last issue…..? (MULTIPLE RESPONSE)

About one in five (21%) respondents affirmed that they had personally tried to call ActewAGL to report problems or disruptions to the electricity supply for their organisation in the past year; 4% of all organisations claimed to have made a call that related to the recent bushfires.

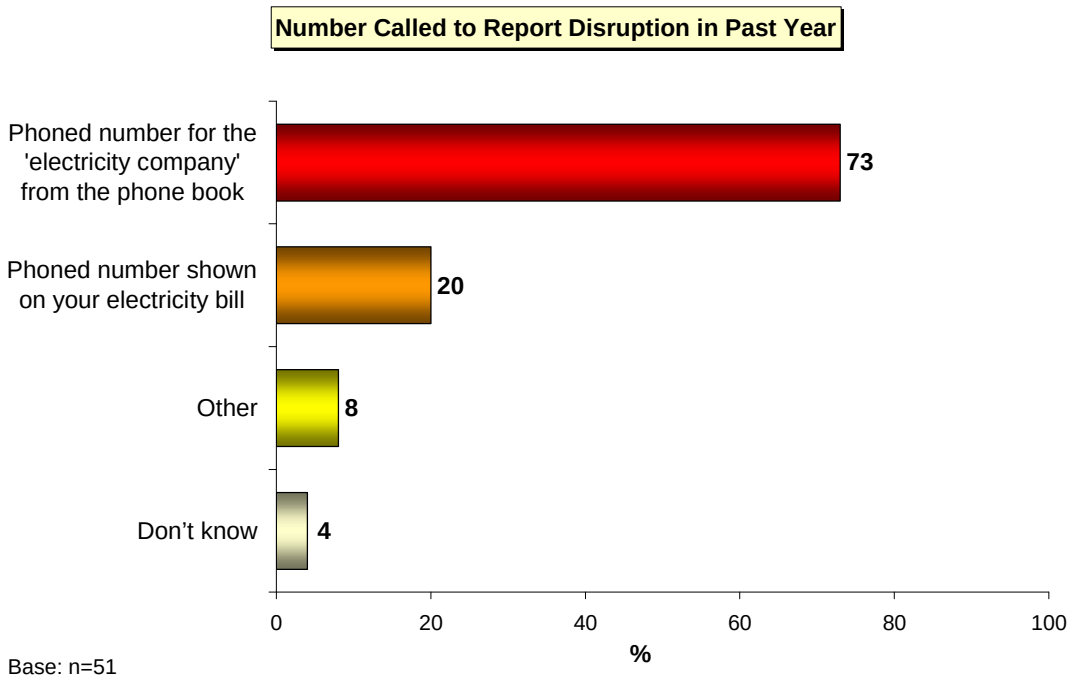
Of those who had made a call, about one third were either 'put on hold and then put through to a person' (37%) or 'received a recorded message about the expected repair time' (31%). Only one quarter (25%) 'got through and spoke to a person without delay'.

Calling ActewAGL about a supply disruption was significantly more likely among those who had more frequent disruptions, viz.,

- A total of 37% of those who said they experienced '2 or more' outages per year had tried to call ActewAGL versus only 10% of those who 'never' experienced outages.

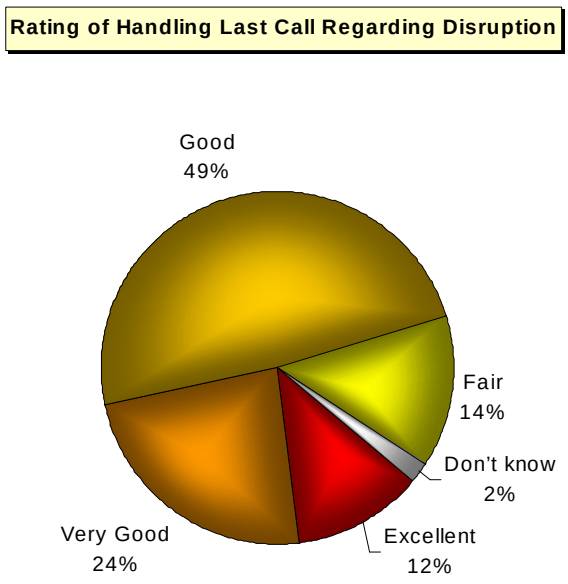
- A total of 37% of those who said they experienced '5 or more' voltage dips per year had tried to call ActewAGL versus only 12% of those who said they experienced 'less than one' such instance per annum.

- 33% of those who said they experienced '2 or more' spikes or surges per year had tried to call ActewAGL versus only 12% of those who said they 'never' experienced these.



A3. As far as you can remember which of the following did you do?.....(MULTIPLE RESPONSE)

Among those who made a call in the past year to report a power disruption, for the overwhelming majority the phone number was obtained from the phone book (73%). Another one in five phoned the number shown on their phone bill.



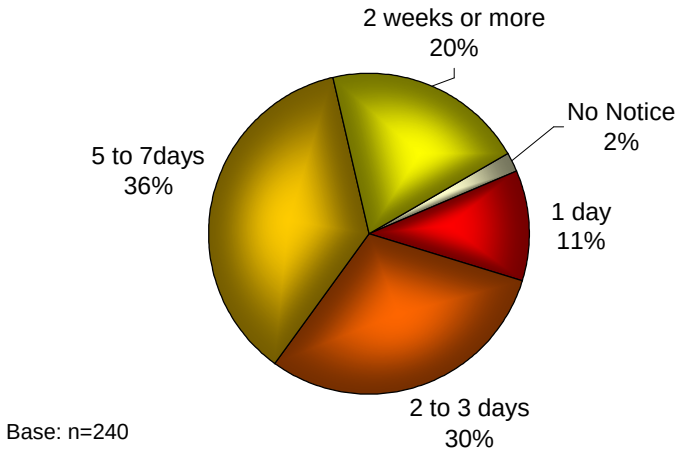
TOTAL Good + : 84%

Base: n=51

A5. And how would you rate ActewAGL in handling your call on that last occasion? Would you say…..(SINGLE RESPONSE)

The majority of organisations (84%) rated the handling of their call on that last occasion as 'good' or better. The lowest rating given was 'fair', chosen by only 14% of organisations. No-one rated the call handling as 'poor'.

Acceptable Notice for Cut-off to Undertake Planned Maintenance Work



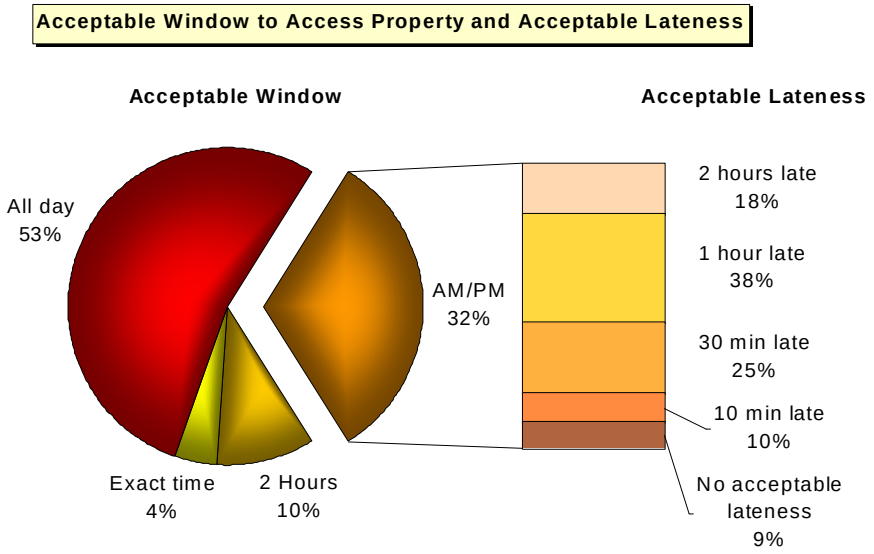
A6. If ActewAGL needed to cut off the electricity to to do some planned maintenance work , how much notice, if any would you find acceptable? Would you say…..(SINGLE RESPONSE)

Eighty percent of organisations nominated a period of up to one week as being 'acceptable' as the notification period for a power cut off to undertake planned maintenance work; about one third nominated each of '2 to 3 days' and '5 to 7 days' as being 'acceptable'. One in five organisations believed that 2 weeks or more was required.

A number of significant differences between subgroups are of interest - most demanding were the 'government & infrastructure' industry sector and dedicated-office based organisations:

- The 'government & infrastructure' sector considered an average of 7.1 days as 'acceptable' whilst for the 'grow / build' sector only required an average of 3.8 days.

- Home office based organisations wanted an average of 5 days notice versus 6.7 days for non-home office based organisations.



Base: Acceptable window n=240; Acceptable lateness for *am/pm window* n=77

A7. If ActewAGL needed access to your property to carry out some planned maintenance work, would….be acceptable to you? (SINGLE RESPONSE)
A8. And how much after that window would you find their arrival to still be acceptable to you? (SINGLE RESPONSE)

Just over half (53%) of the organisations interviewed considered an 'entire day' to be an 'acceptable' window for accessing property to undertake planned maintenance work. One third (32%) thought a shorter 'morning/afternoon' window was 'acceptable', whilst 10% considered a '2 hour' window 'acceptable'.

A number of significant differences in results between subgroups were identified in terms of appointment windows for property access. Those most likely to be lenient were those more favourably disposed to ActewAGL and the 'grow/build' industry sector:

- Those rating ActewAGL as 'excellent' were more likely to consider 'all day' an 'acceptable' window (63%) versus only 46% of those rating ActewAGL as only 'good'.

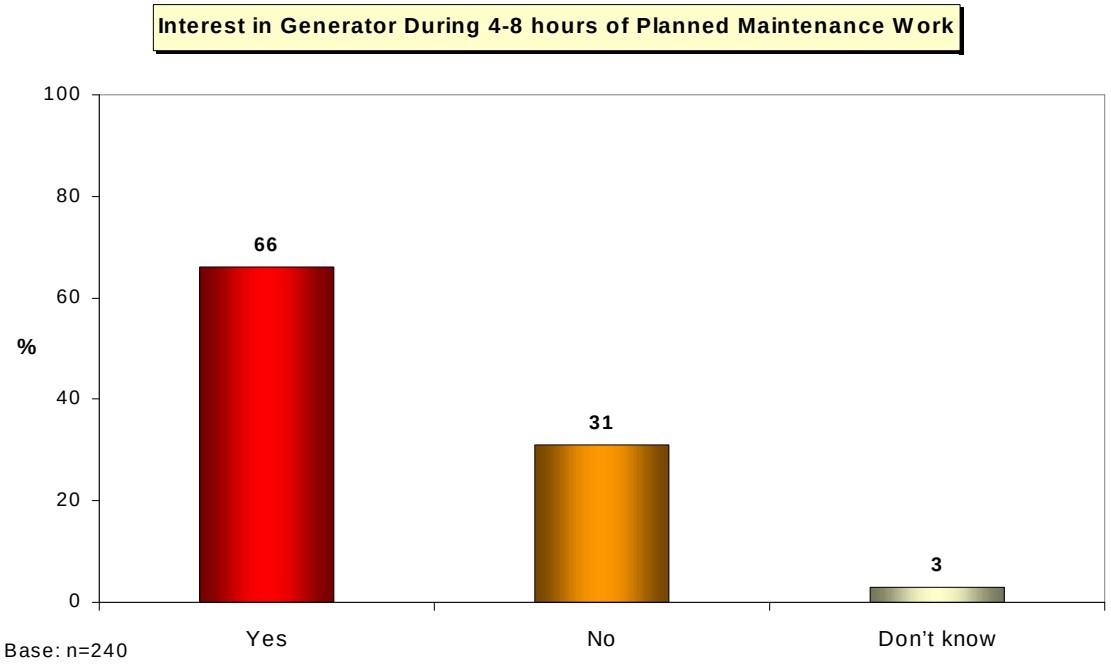
- The 'grow/build' industry sector was more likely to accept an 'all day' window (83% versus a maximum of 56% for any other industry sector).

All those who considered a window smaller than an entire day to be 'acceptable' notification for property access, were also asked about the amount of 'lateness' they would accept in meeting that window. Of those stipulating a 'morning/afternoon' window[92] (77 respondents), almost all (91%) considered some amount of lateness to be 'acceptable',

[92] Sample sizes were too small to analyse 'acceptable lateness' windows among those choosing appointment windows other than 'morning/afternoon'.

although the amount of lateness varied widely:

- 25% considered ‘30 minutes late’ to be ‘acceptable’,
- 38% considered ‘1 hour late’ ‘acceptable’, and
- 18% considered ‘2 hours late’ ‘acceptable’.



A9. If the power went out due to planned maintenance for 4 to 8 hours during business hours would you be interested in ActewAGL supplying you with a power generator to keep vital equipment functioning?….(SINGLE RESPONSE)

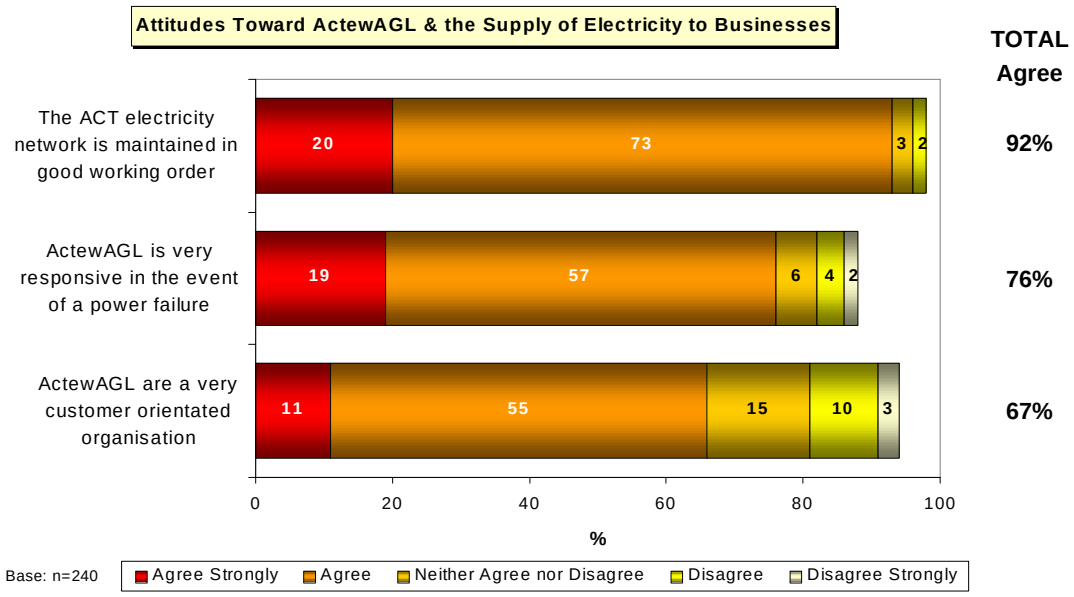
Organisations were asked about their interest in being supplied with a generator to keep vital equipment functioning in the event of the power being cut off due to planned maintenance for a period of 4 to 8 hours (during business hours). Two thirds confirmed that they would be interested in ActewAGL supplying them with such a generator.

Interest in a generator was significantly higher among:

- The 'sales' and the 'government & infrastructure' industry sectors (74% and 72%respectively) compared with other industry sectors.

- Larger organisations: those with more employees (5 or more employees, 81%), multiple sites (86%), and annual electricity bills of at least $5,000 (82%).

Organisations rated their level of agreement with twelve aspects of ActewAGL's service. Results are displayed and discussed over 3 graphs below, in descending order of the level of total agreement.



A10. I am now going to read out some statements about electricity supply to businesses, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that…..[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree (SINGLE RESPONSE)

By far the most favourable response was attained in relation to the 'electricity network being maintained in good working order' with almost all organisations (92%) agreeing. 'Total agreement' was also high (76%) with the statement that 'ActewAGL is very responsive in the event of a power failure', although 12% noted that they either 'did not know' or this aspect was 'not applicable' to them. Two thirds (67%) agreed that 'ActewAGL are a very customer orientated organisation'.

Significant differences identified between subgroups are discussed below.

Perceptions of the electricity network being maintained in good working order

- Those rating ActewAGL as 'excellent', as well as those 'never' experiencing voltage dips, were much more likely to 'agree strongly' that the 'electricity network is maintained in good working order' (33% and 35% respectively).

Perceptions of ActewAGL as very responsive in the event of a power failure

- Satisfaction with the electricity supply and satisfaction with ActewAGL were both positively related to higher levels of 'strong agreement' with the statement that 'ActewAGL is very responsive in the event of a power failure'; 33% of those rating the

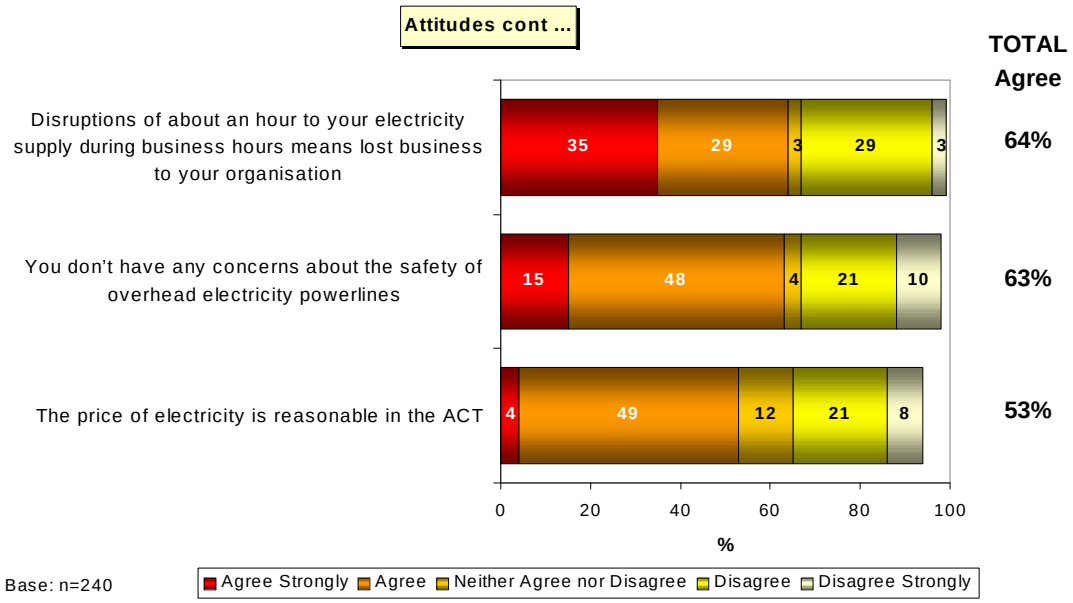
electricity supply as 'excellent' and 35% of those rating ActewAGL as 'excellent', 'agreed strongly'.

Perceptions of ActewAGL as being a very customer orientated organisation

- ActewAGL is more likely to been perceived as strongly 'customer oriented' when the organisation itself is highly regarded, and when voltage dips not occur. Specifically:

    - Of those rating ActewAGL as 'excellent', 25% agreed strongly that the organisation is customer orientated versus only 7% of those that rated ActewAGL as only 'good'.

    - Those who 'never' experienced voltage dips were much more likely to 'agree strongly' that 'ActewAGL is customer orientated' (24% agreeing strongly versus only 4% who reported experiencing '5 or more' voltage dips per annum).



A10. I am now going to read out some statements about electricity supply to businesses, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that.....[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree (SINGLE RESPONSE)

Nearly two thirds of organisations (63%) 'don't have any concerns about the safety of overhead electricity powerlines'; however 31% 'disagree' or 'disagree strongly' with this statement.

However, for nearly two thirds of organisations (64%), 'disruptions of about an hour to the electricity supply during business hours does mean a loss of business'. Further, only about half of the organisations interviewed agreed that 'the price of electricity is reasonable in the ACT' (only 4% 'agreed strongly'); three in ten disagreed.

Notable significant differences between subgroups included:

You don't have any concerns about the safety of overhead electricity powerlines

- 'Concern about the safety of overhead electricity powerlines in the ACT' was much lower amongst those organisations that rated their electricity supply or ActewAGL as 'excellent' (28% and 29% respectively 'agreeing strongly' with the statement).

Disruptions of about an hour to your electricity supply during business hours means lost business to your organisation

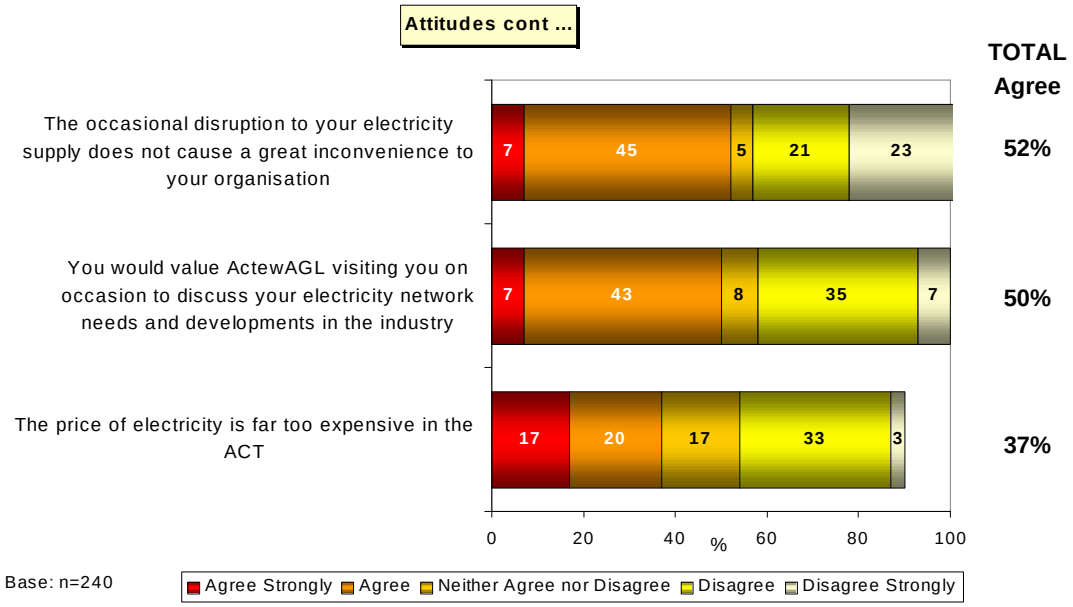
- Lost business due to a supply disruption was more likely among:
    - The 'sales' and the 'government & infrastructure' industry sectors (46% and 40%

'strong agreement' respectively)

- Larger organisations (with around 50-60% 'strong agreement' for those with '5 or more employees', those more than one site, those with electricity bills in excess of $2,000 per annum, and those operating from a dedicated business office).

Perceptions of the price of electricity being reasonable in the ACT

- Those rating their electricity supply or ActewAGL as 'excellent' were also much more likely to 'agree strongly' that 'the price of electricity is reasonable' (11% and 15% respectively).



A10. I am now going to read out some statements about electricity supply to businesses, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that…..[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree (SINGLE RESPONSE)

Occasional disruptions to the electricity supply is 'not considered to cause a great inconvenience' for about half (52%) of the organisations interviewed; however 43% disagreed.

Half of the organisations interviewed said they 'would value a visit from ActewAGL to discuss their electricity network needs and developments in the industry'.

Consistent with the 53% noted earlier who considered the price of electricity to be reasonable, nearly 4 in 10 (37%) considered 'the price of electricity to be far too expensive in the ACT'; a similar proportion disagreed (36%).

Significant differences between subgroups are discussed below:

<u>The occasional disruption to the electricity supply does not cause a great deal of inconvenience</u>

- Organisations that rated their <u>electricity supply</u> or <u>ActewAGL</u> as 'excellent', were less likely to claim that disruptions cause them a great inconvenience. Specifically, there was a greater tendency to 'agree strongly' that 'the occasional disruption to their electricity supply does not cause a great deal of inconvenience' (14% among those rating their electricity supply as 'excellent' and 17% among those rating ActewAGL as 'excellent').

<u>You would value ActewAGL visiting you on occasion to discuss you electricity network</u>

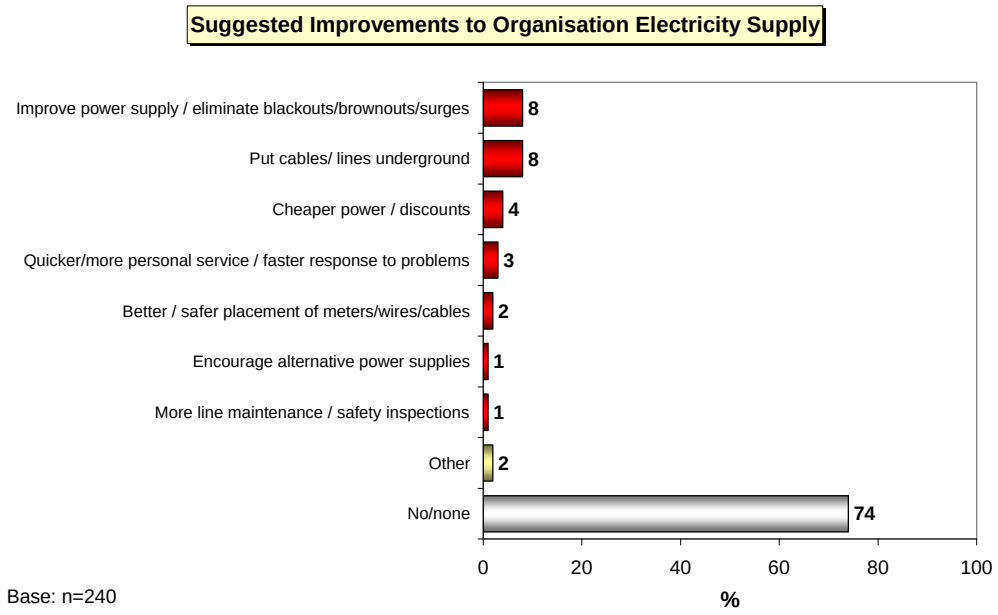
needs and developments in the industry

- Those organisations experiencing '5 or more' voltage dips per annum were more likely to agree that they would value a visit from ActewAGL (65% total agreement).

Perceptions of the price of electricity being far too expensive

- Organisations most positively disposed to the price of electricity were those that rated their electricity supply or ActewAGL as 'excellent' (with 52% and 50% respectively 'disagreeing' in total that it is 'too expensive').

- Those least favourable to the price of electricity were the 'sales' and 'grow/build' industry sectors (24% and 23% respectively 'agreeing strongly that it was 'too expensive').

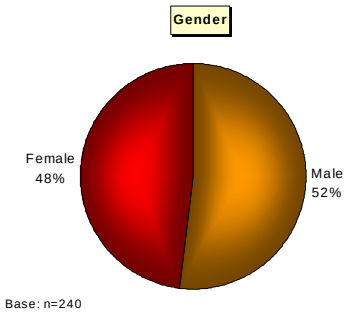


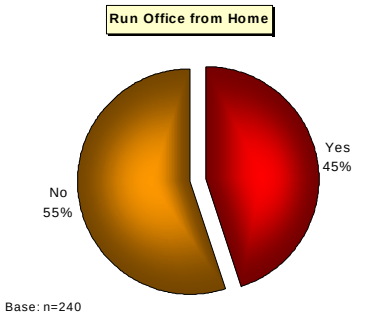
A11. Are there any improvements that you would like to see made to your electricity supply to your site? (MULTIPLE RESPONSE)

About three quarters (74%) considered that no improvement to the electricity supply was required.

Among those with improvement suggestions, a wide variety were made. Eight percent of organisations suggested general 'improvements to the power supply' or specifically nominated the 'elimination of blackouts, brownouts or surges'. An additional 8% suggested undergrounding. All other suggestions were made by fewer than 5% of organisations each.

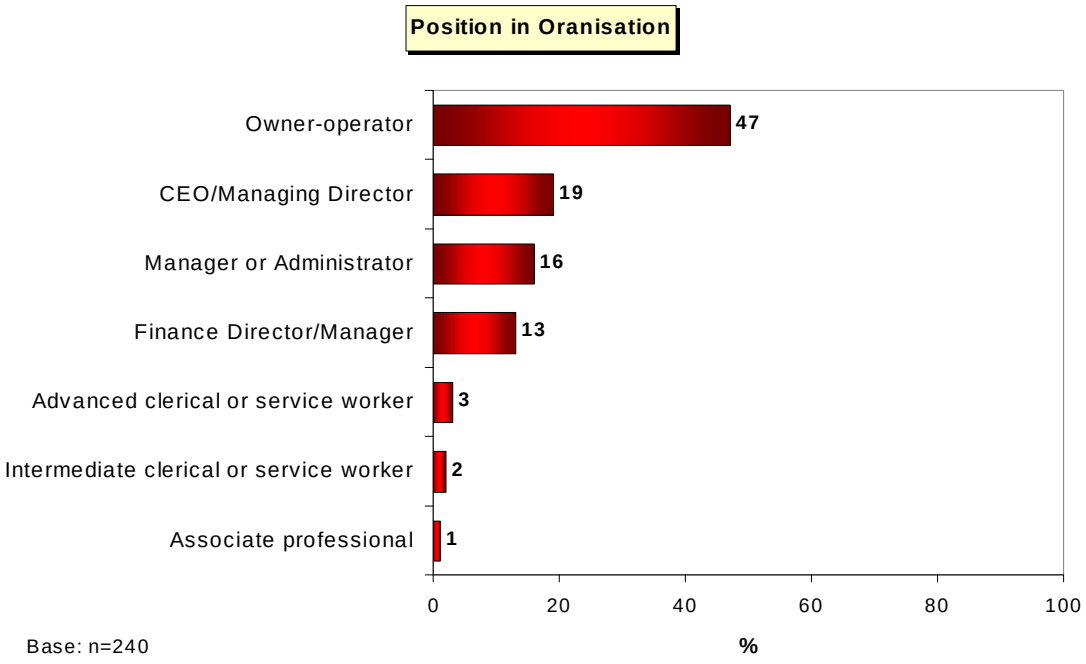
S.2.4. Organisation and Respondent Profile





F3. Do you currently run your office from home? (SINGLE RESPONSE)

Just under half the respondents were female (48%) and 45% ran their business from home.



F2. What is your position in the organisation? (SINGLE RESPONSE)

Just under half of respondents (47%) were the owner-operator of the business. Another one in five (19%) were the CEO / Managing Director. In fact, almost all respondents held senior management roles within the business.

APPENDIX T. WATER/WASTEWATER – RECRUITMENT SURVEY FINDINGS

Interpreting the Findings:

When interpreting results of the 'recruitment survey', the following criteria has been used in accordance with standard practice in the market research, and the broader social sciences, industry:

1. Results are only presented for instances where the sample size (ie. the 'base' for the question) has a minimum of 30 respondents,[93]

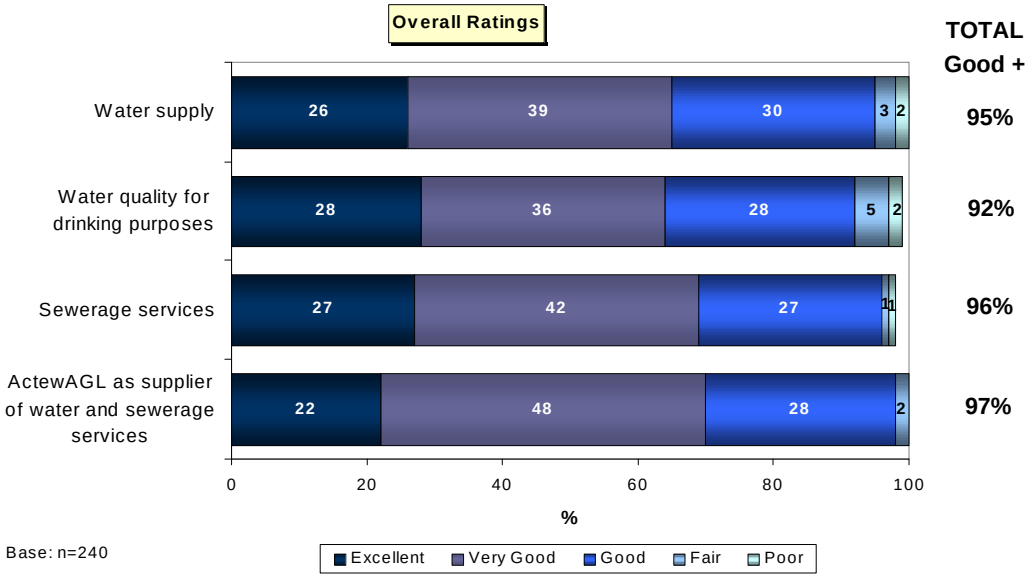
2. The term 'significant' means that results are 'statistically' significantly different as discussed in the text, at the 95% level of confidence.

Further, significant differences between subgroups have only been discussed where they have been identified as being significant; that is, the 'absence' a significant difference has not been systematically noted.

[93] As noted earlier in the report, sample sizes of 30 or more are considered "reasonably large" as the sampling distributions of the sample estimates (such as means or proportions) for populations that are close to the 'normal distribution'. For a discussion of this area refer to Chapters 9 'Procedures for Drawing Probability Samples' (particularly p. 302) and 15 'Data Analysis', in Dillon, Madden & Firtle, "***Marketing Research in a Marketing Environment***" 1990, or any statistics text book.

T.1. Residential Water/Wastewater

T.1.1. Overall Ratings



O1. Firstly, overall how would you rate the water supply to the home in which you liveas currently delivered by ACTEW? (SINGLE RESPONSE)
O3. And overall how would you rate the quality of the water supplied to your home for drinking purposes as currently delivered by ACTEW? (SINGLE)
O5. And now what about sewerage services, this means taking sink water and sewerage away from your home, and treating it. Overall, how would you rate the sewerage service for the home in which you live? Would you say it was…..(SINGLE RESPONSE)
O7. And overall how would you rate ActewAGL as the supplier of water and sewerage services to the home in which you live? (SINGLE RESPONSE)

Ratings were very favourable across the board with respect to overall perceptions of:

- The water supply
- The water quality for drinking purposes
- Sewerage services
- ActewAGL as supplier of water and sewerage services.

Ratings of 'good' or better exceeded 90% for all four aspects noted above; in fact the level of 'excellent' ratings was greater than one in five across the board. Further, 'poor' ratings did not exceed 2% in any instance.

Perceptions of these four areas were positively related, viz.,

- Those who rated ActewAGL as 'very good' or better were also significantly more likely to rate the water supply as 'very good' or better (77% versus 36% among those rating ActewAGL as only 'good').
- Those who rated the water supply as 'very good' or better were also significantly more

likely to rate the water quality as 'very good' or better (77% versus only 40% among those rating the water supply as only 'good').

- Similarly those who rated ActewAGL as 'very good' or better were more likely to rate the water quality as 'very good' or better (78% versus only 36% among those rating the ActewAGL as only 'good').

- Those who rated the water supply as 'very good' or better were also significantly more likely to rate the sewerage service as 'very good' or better (80% versus only 45% among those rating the water supply as only 'good').

- Similarly those who rated ActewAGL as 'very good' or better were more likely to rate the sewerage service as 'very good' or better (85% versus only 32% among those rating the ActewAGL as only 'good').

- Finally, those who rated the sewerage service as 'very good' or better were more likely to rate the water quality as 'very good' or better (79% versus only 31% among those rating the sewerage service as only 'good').

Subgroup differences identified for each of these four aspects are discussed below.

Perceptions of the water supply

Experiences of problems were associated with relatively lower overall ratings of the water supply. Specifically:

- Households who have 'never' experienced the water being cut-off were more likely to rate the water supply as 'excellent' (30%) compared with those who claim to have an average of '1 or more' such experiences per annum (15%).

- Similarly those who had 'never' experienced a 'sewerage overflow' were more likely to rate the water supply as 'very good' or better (57%) versus those who claim to have had an average of '1 or more' such experiences per annum (37%).

Perceptions of the water quality for drinking purposes

Experiences of problems were also associated with lower overall ratings of the water quality:

- Households who have 'never' experienced the water being cut-off were more likely to rate the water quality as 'very good' or better (67%) compared with those who claim to have an average of '1 or more' such experiences per annum (48%).

- Similarly those who had 'never' experienced a 'sewerage overflow' were more likely to rate the water quality as 'very good' or better (66%) versus those who claim to have had

an average of '1 or more' such experiences per annum (47%).

Perceptions of sewerage services

Experiences of problems were also associated with lower overall ratings of the sewerage service:

- Households who have 'never' experienced the water being cut-off or had only experienced this 'less often than once per year', were more likely to rate the sewerage service as 'excellent' (around 30%) compared with those who claim to have an average of '1 or more' such experiences per annum (13%).

- Similarly those who had 'never' experienced a 'sewerage overflow' or had only experienced this 'less often than once per year', were more likely to rate the sewerage service as 'very good' or better (70% to 80%) versus those who claim to have had an average of '1 or more' such experiences per annum (40%).

Perceptions of ActewAGL as supplier or water and sewerage services

Households eligible for a discount off their water & waste-water bill were more less likely to rate ActewAGL as 'good' or better (90%) than were those who were not entitled to a discount (98%).

Those running an office from home were also less likely to rate ActewAGL as 'very good' or better (50%) versus others (73%).

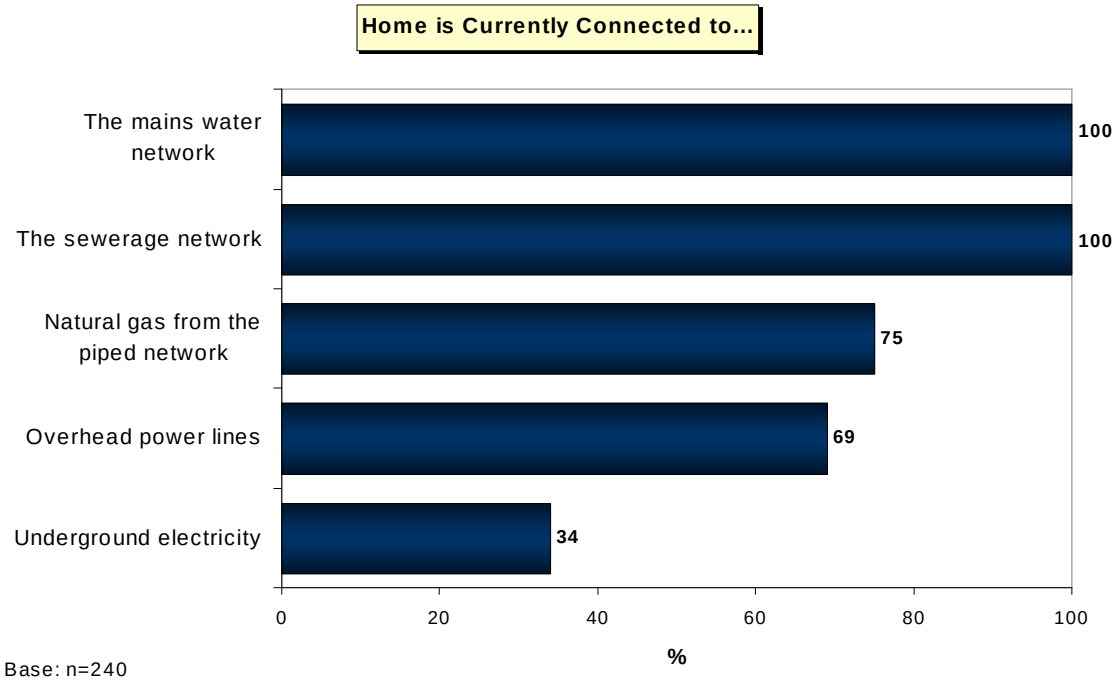
Again, experiences of problems were associated with lower overall ratings of ActewAGL:

- Respondents who had their water cut off 'once or more' per annum were less likely to rate ActewAGL as 'very good' or better (56%) than those experiencing this problem 'never' or 'less often than once per annum' (about 70%).

- Households experiencing water pressure problems 'once per annum or more often' were also less likely to rate ActewAGL as 'excellent' (13%) than were those who experienced pressure problems 'less often than once per annum' or 'never' (25%).

- Those experiencing a 'sewerage overflow' 'at least once per year' were less likely to rate ActewAGL as 'very good' or better (53%) compared with those having this experience 'less often than once per year on average' or 'never ' (about 70%).

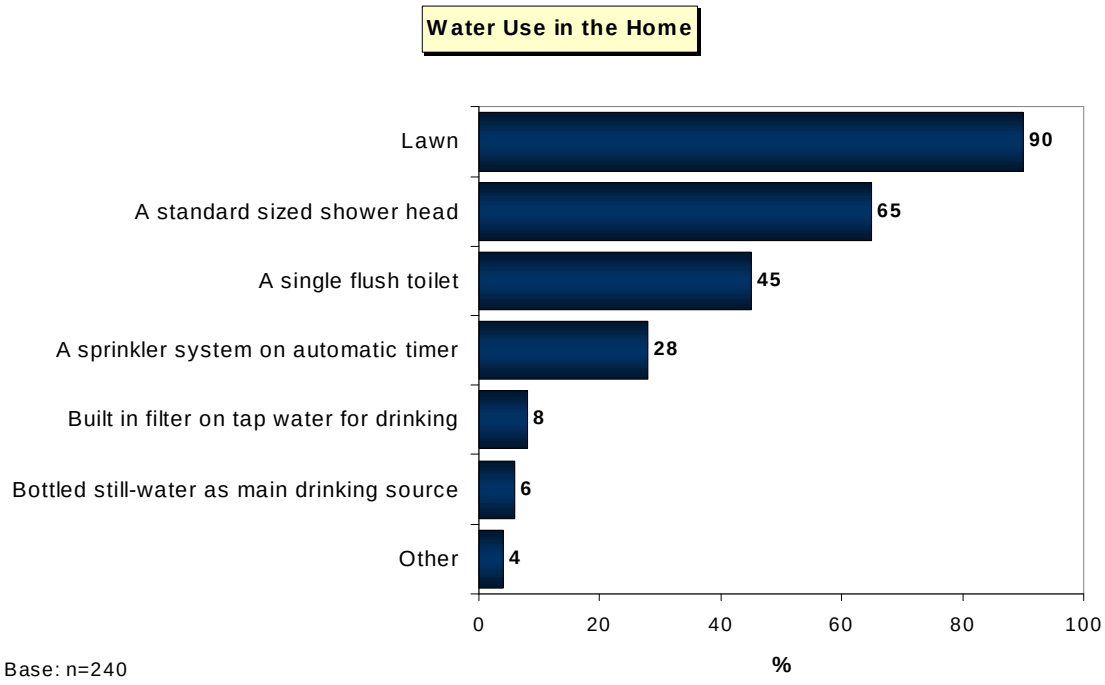
T.1.2. Behaviour



Base: n=240

R2. Is your home currently connected to.....(MULTIPLE RESPONSE)

Of those connected to both the mains water network and the sewerage network, three quarters were found to be also connected to natural gas from the piped network. About two thirds of these homes also had overhead power connected with the remaining one third having underground power.



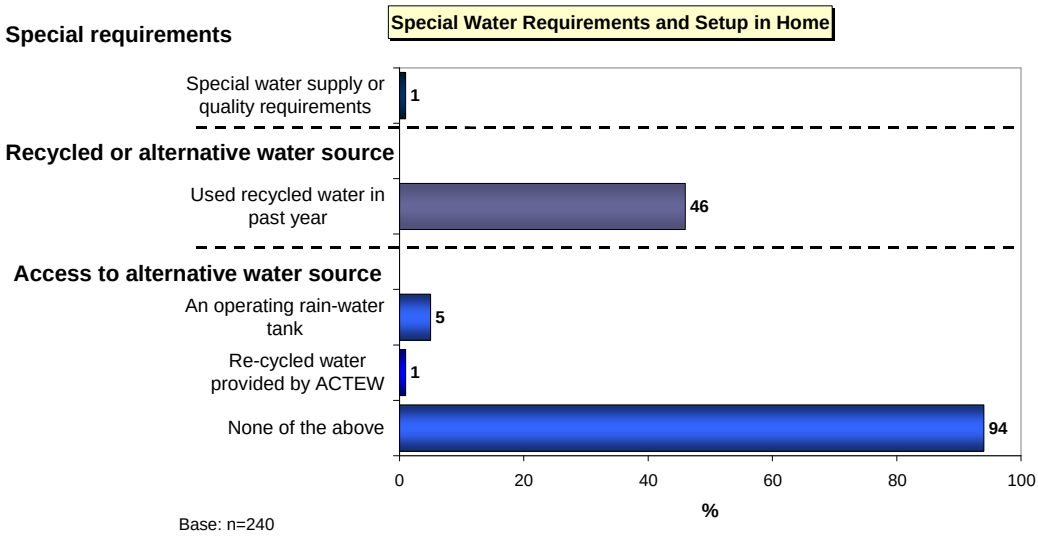
Base: n=240

B1. Do you have any of the following at your home? … (MULTIPLE RESPONSE)

The vast majority (90%) of homes used water on a lawn; about three quarters had a sprinkler system on an automatic timer.

Two thirds (65%) had a standard sized showerhead and 45% had a single flush toilet.

In terms of drinking water, 8% noted having a filter on their tap while 6% used bottled water as their main source of drinking water.



Base: n=240

B2. And do you, or does anyone else in your household,have any special water supply or water quality requirements such as might be needed for kidney dialysis or some other medical condition? (SINGLE RESPONSE)

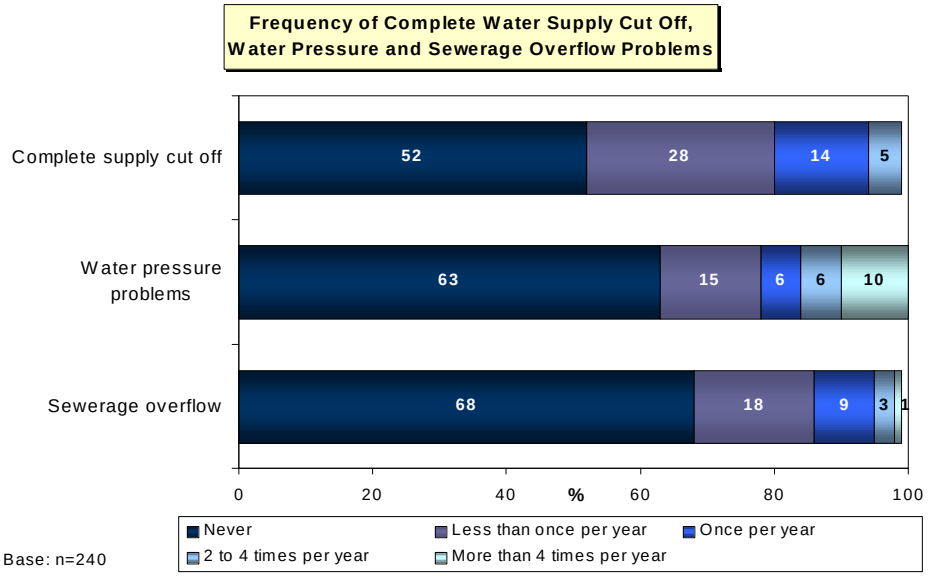
B3. In the past year, have you used recycled water, or water from an alternative source to mains water, at all for any purpose at your home, such as watering the garden? (SINGLE RESPONSE)

B4. Do you have access to any of the following alternative sources of water to mains water at your home? (MULTIPLE RESPONSE)

One percent of homes claimed to have 'special water supply or water quality requirements such as those required for … a medical condition'.

Almost half (46%) had 'used recycled water, or water from an alternative source to mains water' in the past year. Females were significantly more likely to have used recycled water in the past year (54% versus 37% for males).

Six percent claimed to have 'access to alternative sources of water to mains water … for any purpose in the home …'; 5% noted that they had an operational water tank and 1% claimed to be using re-cycled water provided by ACTEW.



B5. About how often would you say the water to your home has been completely cut off? Would you say…..(SINGLE RESPONSE)

B6. How often would you say you have experienced problems with water pressure at your home? Would you say….(SINGLE RESPONSE)

B8. About how often would you say you have experienced a sewage overflow on your property or around your neighbourhood? Would you say…..(SINGLE RESPONSE)

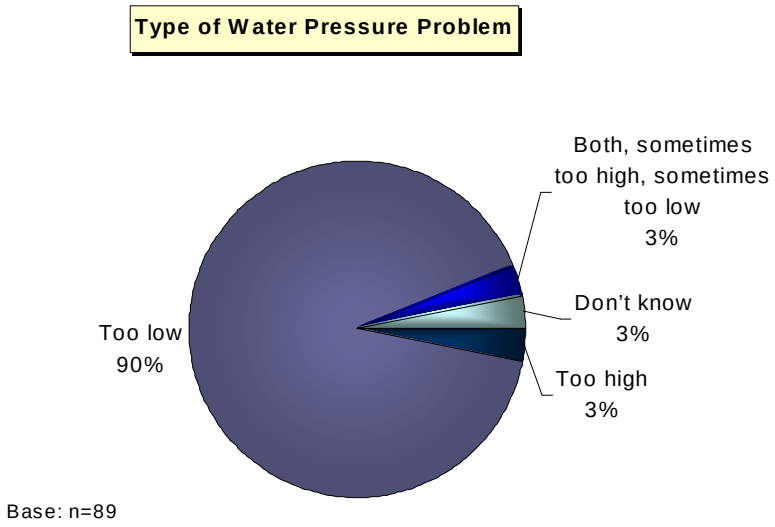
The majority of homes claimed to have 'never' experienced a problem with the water supply being cut-off (52%), 'water pressure' (63%) or 'sewerage overflow' (68%). Even among those who said they had, the incidence was rare, being contained to 'once per year or less often' in almost all cases. However, 10% of households claimed to experience water pressure problems more than 4 times per year.

Households reporting problems in one area of the water and sewerage supply were more likely to have problems in other areas of the water and sewerage supply, and conversely those not having problems in one area were more likely not to have problems in other areas. This suggests that problems with the water and sewerage supply impact a number of aspects of the service. Specifically:

- Those who claimed to have experienced a sewerage overflow 'at least once per year' were more likely to say they had their water cut off more often (average of .9 times per annum) than those who said they had 'never' experienced a 'sewerage overflow' or had experienced it 'less often than once per year' (average of about .4 times per annum).

- Those who said they had 'never' had 'water pressure problems' also tended to say they had 'never had their water cut off' (61% versus 37% for those who had 'ever' experienced a 'water pressure problem').

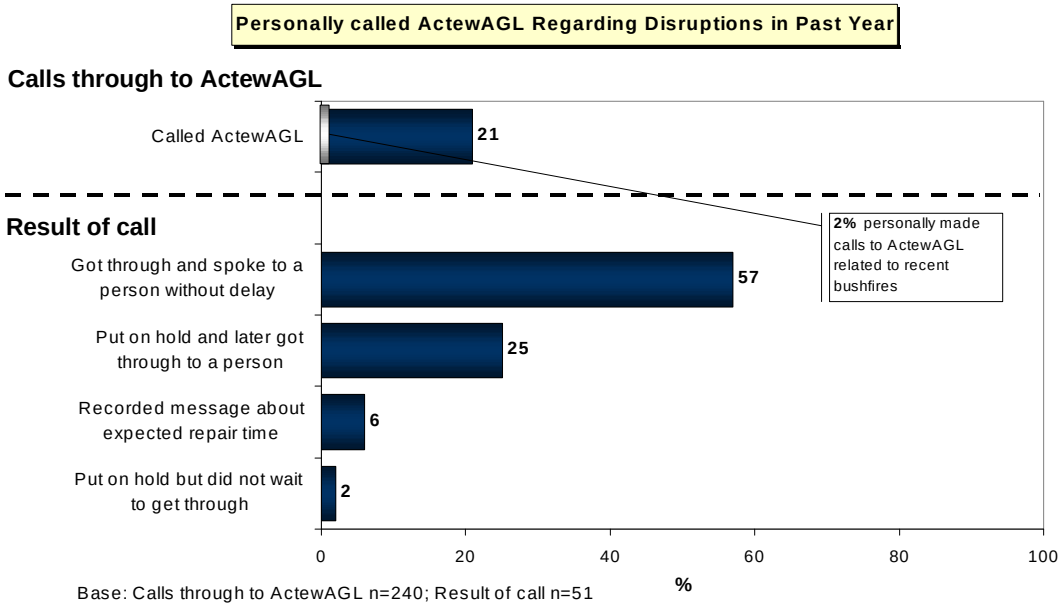
- Households reporting to have 'never' experienced a 'sewerage overflow' were less likely to say they have experienced 'water pressure' problems (.6 times per annum on average) compared with those who say they had (1.2 times per annum on average).



B7. And does this tend to be a problem with the pressure being too high or too low?.....(SINGLE RESPONSE)

Of those who reported to have 'ever' experienced a water pressure problem, the problem was almost invariably 'low' pressure rather than the pressure being 'too high' or being variable.

T.1.3. Attitudes



A1. Firstly, have you PERSONALLY tried to call ActewAGL to report any problems or disruptions to your water supply or sewerage services in the past year? (SINGLE RESPONSE)

A2. Did the call you make to ActewAGL relate to the recent bushfires? (SINGLE RESPONSE)

A3. Which of the following things happened when you called them for the last issue? ...(MULTIPLE RESPONSE)

Just over one in five respondents (21%) had 'personally tried to call ActewAGL to report any problems or disruptions to (their) water supply or sewerage services in the past year'; 2% of all households claimed to have made calls related to the recent bushfires.

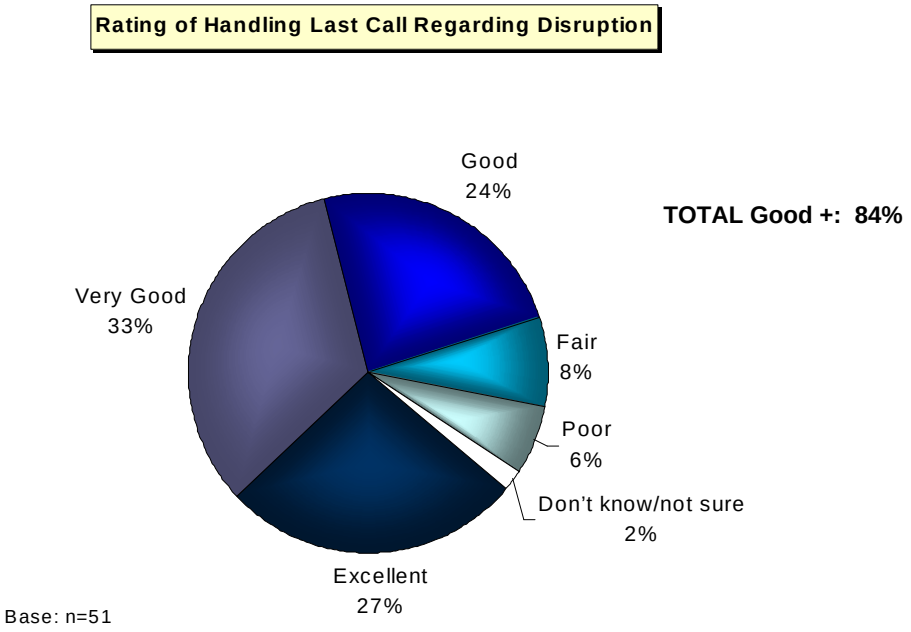
Of those who called, most (57%) 'got through and spoke to a person without delay' whilst one quarter were 'put on hold and later got through to a person'.

Those who had 'never' experienced problems with their water or sewerage supply were significantly less likely to have called ActewAGL in the past year, thus,

- only 14% of those who had 'never' had their water cut off had called ActewAGL, compared with about 30% of those who had 'ever' had their water cut off .

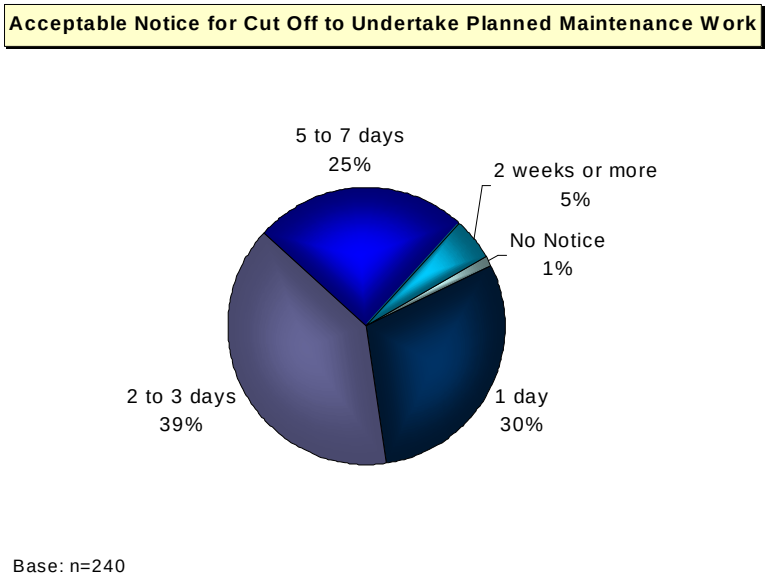
- only 17% of those who had 'never' experienced problems with their water pressure had called ActewAGL compared with over one third of those who experienced water pressure problems 'at least once per year'.

- only 17% of those who had 'never' experienced a sewerage overflow had called ActewAGL compared with 37% of those who experience an overflow 'at least once per year' .



A4. And how would you rate ActewAGL in handling your call on that last occasion? Would you say…..(SINGLE RESPONSE)

Most of those who had personally made a call to ActewAGL about a problem in the past year, rated ActewAGL's handling of that call as 'good' or better (84%); in fact one quarter rated the call handling as 'excellent'. Six percent rated it as 'poor'.

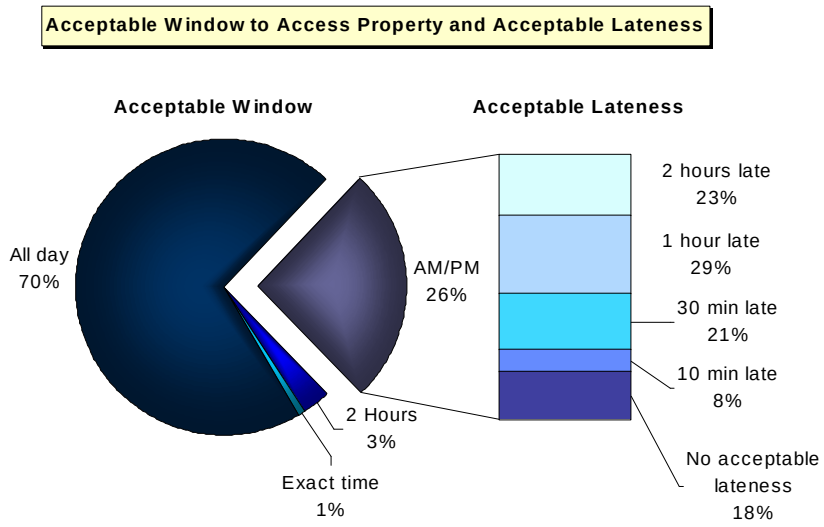


Base: n=240

A5. If ActewAGL needed to cut off the water to your home in order to do some planned maintenance work, how much notice, if any would you find acceptable? Would you say…..(SINGLE RESPONSE)

Almost all households (95%) felt that one week or less was 'acceptable' as the notice period for cutting off the water supply to their home in order to undertake planned maintenance work. '2 to 3 days 'was the most popular notice period (selected by 39%), followed by '1 day' notice (30%), followed closely by '5 to 7 days' notice (25%).

Multi-income households, and those running a home office, were significantly more likely than their counterparts to desire '2 weeks or more' notification than their respective counterparts (6% versus 0% for multi versus single income households, and 12% versus 3% for those running home offices versus those not doing so).



Base: Acceptable window n=240; Acceptable lateness for am/pm window n=62

A6. If ActewAGL needed access to your property to carry out some planned maintenance work, would…be acceptable to you? (SINGLE RESPONSE)
A7. And how much after that window would you find their arrival to still be acceptable to you? (SINGLE RESPONSE)

'All day' was considered an 'acceptable' window to access property (to carry out planned maintenance work' by most respondents (70%). A further one quarter (26%) thought a 'morning/evening' window to be 'acceptable'.

An 'all day' window was found to be significantly more likely to be considered 'acceptable' by older respondents and those on lower incomes. Specifically:

- Those in the 'under 40' age group were less likely to consider an 'all day' window 'acceptable' (60%) compared with those 'over 40' (over 70%), and conversely more likely to consider a 'morning/afternoon' window to be 'acceptable' (37%) compared with their older counterparts (about 20%).

- Those in the lower income bracket (less than $100,000 per annum) were more likely to consider an 'all day' window 'acceptable' (73%) compared with their higher income counterparts (58%), and conversely less likely to consider a 'morning/afternoon' window to be 'acceptable' (23%) compared with their counterparts (35%).

Those giving higher ratings to ActewAGL and its services were also more likely to find 'all day' an 'acceptable' window, thus,

- Nearly 80% of those rating ActewAGL, the water quality or the sewerage service as 'very good' or better considered 'all day' to be an 'acceptable' window, compared with just under 60% in each case for those rating these areas as only 'good'.

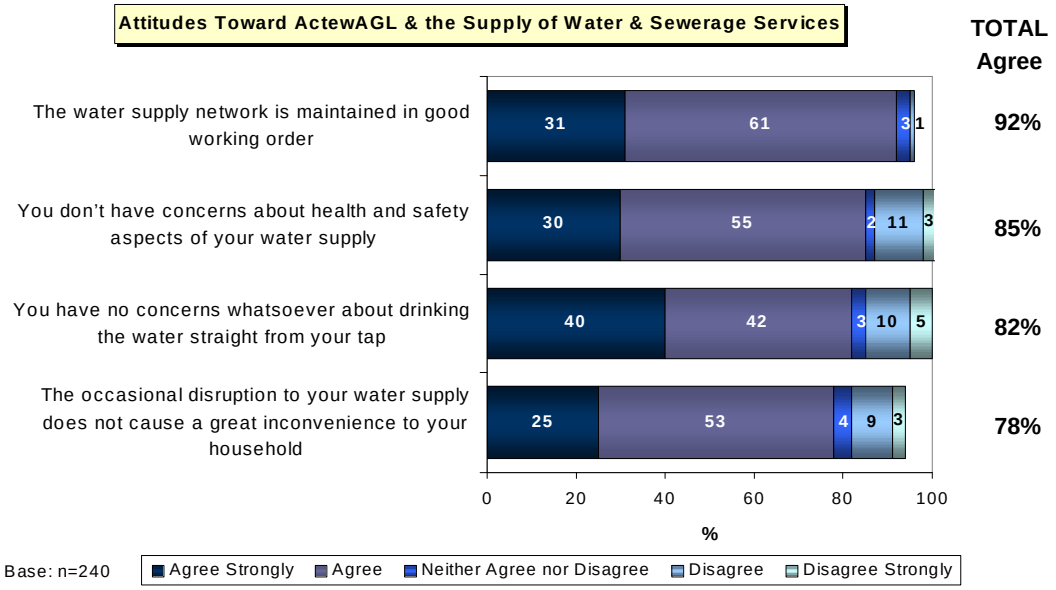
All those who considered a window smaller than an entire day to be 'acceptable' notification for property access, were also asked about the amount of 'lateness' they would accept in meeting that window. Of those stipulating a 'morning/afternoon' window[94] (62 respondents), almost all considered some amount of lateness to be 'acceptable', although the extent of the lateness varied widely:

- About one in five of these households considered '2 hours' late or '30 minutes' late to be 'acceptable', with '1 hour' late being nominated by 29% of households stipulating a 'morning/afternoon' window.

- About one quarter were far more demanding, with 8% accepting only 10 minutes and 18% accepting no lateness at all.

[94] Sample sizes were too small to analyse 'acceptable lateness' windows among those choosing appointment windows other than 'morning/afternoon'.

Households rated their level of agreement with eleven aspects of ActewAGL's service. Results are shown in 3 graphs. The four aspects with the most favourable results are shown and discussed below, with results for the remaining seven aspects shown and discussed over the following pages.



A8. I am now going to read out some statements about household water supply and sewerage services, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that.....[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree? (SINGLE RESPONSE)

There were high levels of total agreement with the statements, viz.,

- 'the water supply network is maintained in good working order' was the one most favourably rated (92% 'agree' or 'agreed strongly'), with only 1% disagreeing,
- 'you don't have concerns about health and safety aspects of your water supply' (85%'total agreement') – although 13% disagreed in total,
- 'you have no concerns whatsoever about drinking the water straight from your tap' (82%) – although 15% disagreed in total,
- whilst 78% 'agreed' or 'agreed strongly' that 'the occasional disruption to your water supply does not cause a great inconvenience to your household' – 'total disagreement' was at 12%.

Significant differences in results between subgroups are discussed overleaf.

Perceptions of the water supply network being maintained in good working order

Perceptions of the water supply network as being maintained in good working order was more likely to be favourable among respondents who are rated ActewAGL or its services favourably. Specifically, 'strong agreement' with this statement was higher among:

- Those rating their water supply as 'excellent' (45% versus 23% for those rating it as only 'good').
- Rating their water quality as 'very good' or better (38% compared with 20% among those rating the water quality as only 'good').
- Those rating ActewAGL as 'very good' or better (38% versus only 17% for those rating it as only 'good').
- Those rating their sewerage service as 'very good' or better (39% versus only 12% among those rating it as only 'good').

The absence of experiencing problems with the water supply was also associated with more favourable perceptions of the water network being maintained in good working order. Specifically, 'total agreement' was higher among those:

- Who have either 'never' had their water cut off or experienced this 'less often than once per year' (about 95% compared with 79% among those having their water cut off 'at least once per year').
- Who have either 'never' had water pressure problems or have experienced these 'less often than once per year' (over 90%) versus 80% for those who have experienced water pressure problems 'at least once per year').
- Who have 'never' had a sewer overflow (97%), with total agreement reducing as the incidence of this experience increased (86% among those experiencing a sewerage overflow 'less often than once per year', reducing to 73% for those experiencing these more frequently).

You don't have concerns about health and safety aspects of your water supply

Safety concerns were lower among those more favourably disposed toward ActewAGL and its services, and older individuals. Specifically, 'strong agreement' with this statement was higher among those:

- Rating ActewAGL as 'very good' or better (34%, versus 18% among those rating it as only 'good').
- Rating their water supply as 'very good' or better (37%, versus only 15% among those rating it as 'good').

- Those rating their water quality as 'very good' or better (42%versus 9% among those rating it as only 'good').

- Rating their sewerage service as 'very good' or better (36%, versus only 14% among those rating it as 'good').

- Those aged over 55 (44%, versus 18% for those under 40).

You have no concerns whatsoever about drinking the water straight from your tap

Concerns about the quality of drinking water from the tap were lower among those more favourably predisposed toward ActewAGL and its services, and among older individuals. Specifically:

- 'Strong agreement' with this statement was significantly higher among those rating:

- Their water supply as 'very good' or better (48%, versus 26% for those rating it as only 'good').

- ActewAGL as 'very good' or better (45%, versus 26% for those rating it as only 'good').

- 'Total agreement' with this statement was significantly higher among those:

- Rating the water quality as 'very good' or better (92%, versus 76% among those rating it as only 'good').

- Rating their sewerage service as 'excellent' (92%, versus 75% among those rating it as only 'good').

- Aged 55 or over (94% versus only 75% among the 'under 40's').

The occasional disruption to your water supply does not cause a great inconvenience

Inconvenience caused by disruption to the water supply was less likely among those more favourably disposed toward ActewAGL and its services, those with smaller water bills and females. Specifically:

- 'Strong agreement' with this statement was higher among:

- Those rating their water supply as 'excellent' (37% versus only 18% for rating it as only 'good').

- Those rating their water quality as 'very good' or better (86% versus 65% among

those rating it as only 'good').

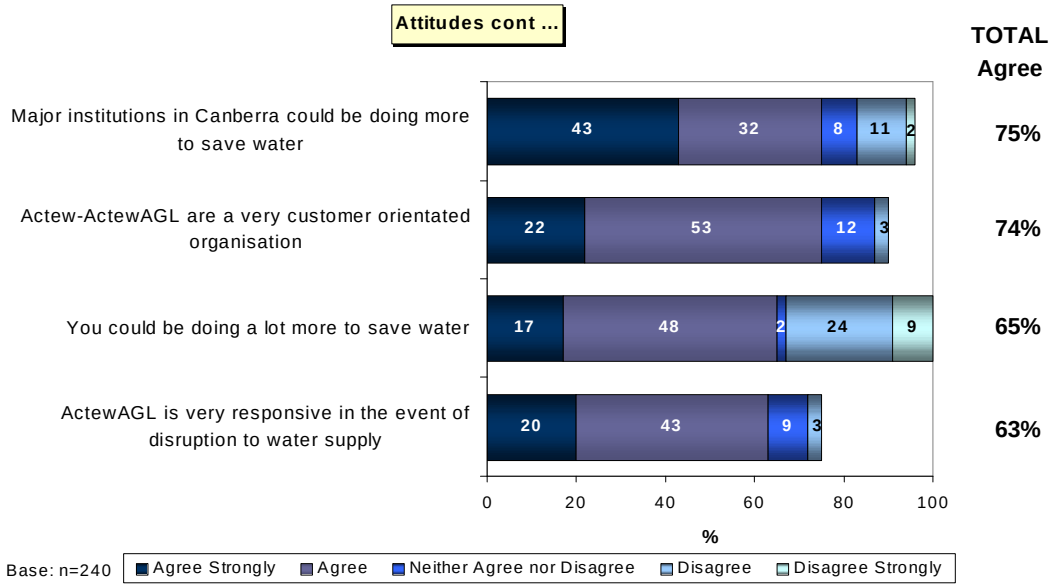
- Those rating their sewerage service as 'very good' or better (82% versus 66% among those rating it as only 'good').

- Those with smaller annual water & wastewater bills (under $800, 32% versus only 15% for those with larger bills).

- 'Total agreement' with this statement was higher among the following subgroups:

  - Those rating ActewAGL as 'very good' or better (84% versus 64% among those rating it as only 'good').

  - Females (83% versus 72% for males).



A8. I am now going to read out some statements about household water supply and sewerage services, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that…..[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree? (SINGLE RESPONSE)

75% 'agreed' or 'agreed strongly' that 'major institutions in Canberra could be doing more to save water'; the 43% level of 'strong agreement' is particularly notable. 'Total agreement' was just under two thirds (65%) with the statement that 'you could be doing a lot more to save water'; conversely one third 'disagreed' or 'disagreed strongly'.

Three quarters of those interviewed (74%) 'agreed' or 'agreed strongly' that 'Actew-ActewAGL are a very customer orientated organisation', with 'total agreement' at nearly two thirds (63%) that 'ActewAGL is very responsive in the event of disruption to water supply'. It should be also noted that unfavourable responses were very low to these two statements (only about 3% 'disagreed' in each case), while a notable remainder responded with either 'don't know' or 'not applicable' (10% and 25% respectively for the two statements), the latter arguably reflecting the relatively low level of experience with supply problems.

Significant differences in results between subgroups are discussed below:

<u>Perceptions of the need for major institutions in Canberra to be doing more to save water in relation to watering public parks and open spaces</u>

'Total agreement' that 'major institutions in Canberra could be doing more to save water' was significantly higher among those less favourably disposed toward ActewAGL or its sewerage service, and among females. Specifically:

- Households rating ActewAGL as 'good' (82%) versus those rating it as 'excellent' (63%).
- Those rating their 'sewerage service' as only 'good' (82%) versus those rating it as 'excellent' (58%)
- Females (81% versus 69% among males).

You could be doing a lot more to save water

'Total agreement' with this statement was significantly higher among:

- Females compared with males once again (75%versus 54%).
- Households with children (72% versus 56% among their counterparts with no children in the household).
- Higher income households ($100,000 per annum plus) (82% compared with 60% among their lower income counterparts).
- Those running offices from home (79% compared with 62% among their non-home office counterparts).

Perceptions of Actew-ActewAGL as a very customer orientated organisation

Perceptions of Actew-ActewAGL as being 'customer oriented' were stronger among those favourably disposed toward ActewAGL and its services. Specifically, 'strong agreement' was significantly greater among those:

- Rating their water supply as 'very good' or better (26% compared with only 11% among those rating it as only 'good').
- Rating ActewAGL more favourably; specifically, while those rating ActewAGL as only 'good' had a 9% level of 'strong agreement' with this statement, this increased to 21% among those rating ActewAGL as 'very good' and then up to 40% among those rating it as 'excellent'.
- Rating their sewerage service more favourably; specifically households rating their sewerage service as only 'good' had an 8% level of 'strong agreement' with this statement, this increased to 22% among those rating it as 'very good' and then up to 38% among those rating it as 'excellent'.

Perceptions of Actew-ActewAGL as 'customer oriented' was also higher among those experiencing fewer sewerage overflow problems, lower income households and those eligible for a discount on their bill. Specifically, the proportion of households 'agreeing' or 'agreeing strongly' that 'Actew-ActewAGL are a very customer oriented organisation' was significantly higher among those:

- Experiencing 'less than 1' sewerage overflow per annum on average (84%, versus 63%

among those experiencing '1 or more' overflows per annum).

- In the lower income bracket (less than $100,000 per annum) (81%, versus 58% among higher income households).

- With discount eligibility (93%, versus 71% among non-eligible households).

Perceptions of ActewAGL as very responsive in the event of disruption to water supply

Consistent with findings for other aspects measured, perceptions of ActewAGL being 'very responsive in the event of disruption to the water supply' was stronger among those rating ActewAGL and its services overall highly. Specifically, 'strong agreement' with this statement was significantly greater among households:

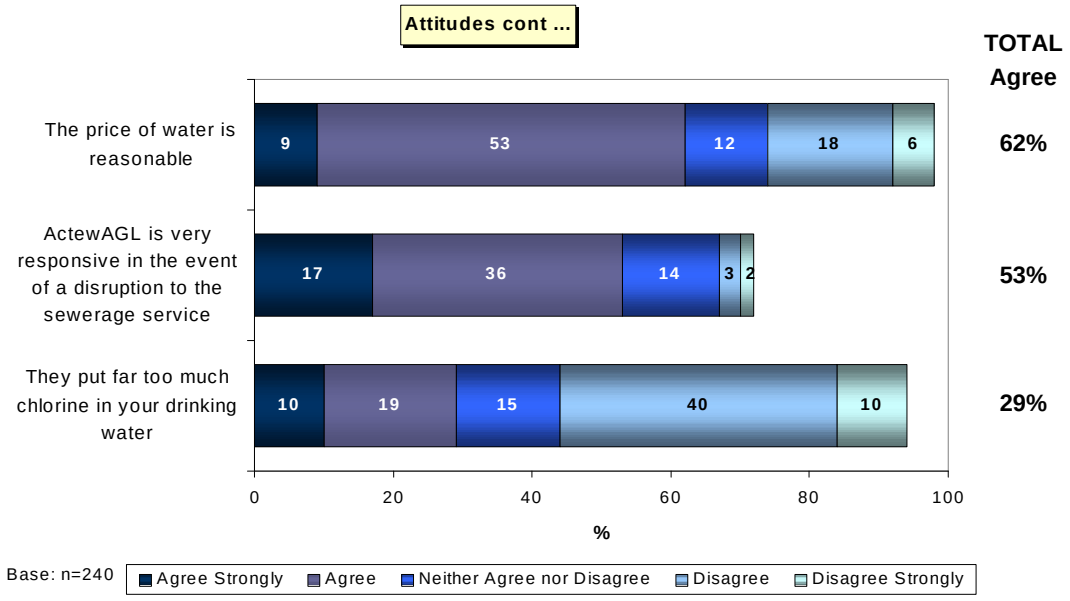
- Rating their water supply as 'excellent' (29%, compared with only 15% among those rating their water supply as 'good').
- Rating ActewAGL more favourably; specifically, while those rating ActewAGL as only 'good' had an 8% level of 'strong agreement' with this statement, this increased to 21% among those rating ActewAGL as 'very good' and then up to 38% among those rating it as 'excellent'.

- Those rating their water quality as 'very good' or better (25%, versus 11% for those rating it as only 'good').

- Rating their sewerage service as 'very good' or better (24%, versus only 11% among those rating it as only 'good').

Further, perceptions of ActewAGL as 'very responsive' were more favourable among lower income and discount-eligible households. Specifically, 'total agreement' with this statement was significantly greater among:

- Those in the lower income bracket (less than $100,000 per annum) (70%, versus only 44% among their higher income counterparts).
- Households with a discount eligibility for their water and waste-water bills (83%, versus 60% for those who are not eligible for the discount).



A8. I am now going to read out some statements about household water supply and sewerage services, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that…..[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree? (SINGLE RESPONSE)

'Total agreement' was 62% with the statement that 'the price of water is reasonable', with most of this being in the 'agree' rather than the 'strongly agree' category. A notable minority (23%) 'disagreed' or 'disagreed strongly'.

Chlorine appeared to be an issue for a notable minority (29%), with 'total disagreement' at 50%; however 15% responded with 'neither agree nor disagree' with an additional 5% saying 'don't know'.

Over half (53%) 'agreed' or 'agreed strongly' that 'ActewAGL is very responsive in the event of a disruption to the sewerage service'; 'total disagreement' was only 5%. Reflecting the relative rarity of this event, about 28% responded with either a 'don't know' or 'not applicable' to this statement.

A number of significant differences in results between subgroups were identified:

<u>Perceptions of the price of water being reasonable</u>

Again, favourable perceptions of the 'price of water being reasonable' were stronger among those holding more favourable views of ActewAGL and its services. Specifically, 'total agreement' with this statement was significantly greater among households who:

- Rated ActewAGL as 'very good' or better (69%, versus 45% for those who rated it as only 'good').

- Rated their drinking water quality as 'very good' or better (68%, compared with 52% for those who rated it as only 'good').
- Rated their sewerage service as 'very good' or better (68% versus only 48% for those rating it as 'good').

Favourable perceptions of the 'price of water being reasonable' were also stronger among those with fewer supply problems, childless households and those will lower bills. Specifically, 'total agreement' with this statement was significantly greater among households:

- Who have 'never' had their water cut-off (69%, compared with 48% for those experiencing '1 or more' instances of the water being cut-off on average per annum).
- Without children (72%) compared with those with children living in them (55%).
- With lower water and waste-water bill sizes (less than $800 per annum) (67%, compared with 54% among lower billing households).

Perceptions of ActewAGL as very responsive in the event of a disruption to the sewerage service

'Responsiveness to sewerage disruptions' was perceived more favourably by those perceiving ActewAGL more favourably. Specifically, 'strong agreement' with this statement increased with more favourable ratings of ActewAGL - while only 11% of those who rated ActewAGL as 'good' 'agreed strongly' that 'ActewAGL is responsive in the event of a disruption to their sewerage service', this increased to 15% for those rating ActewAGL as 'very good' and then up to 29% for those rating is as 'excellent'.

Favourability was also greater among:

- Those who have experienced a sewerage overflow (65% 'total agreement' versus 48% for those had 'never' experienced a sewer overflow).
- Lower income households (less than $100,000 per annum) (60% 'total agreement' versus only 35% among their higher income counterparts).

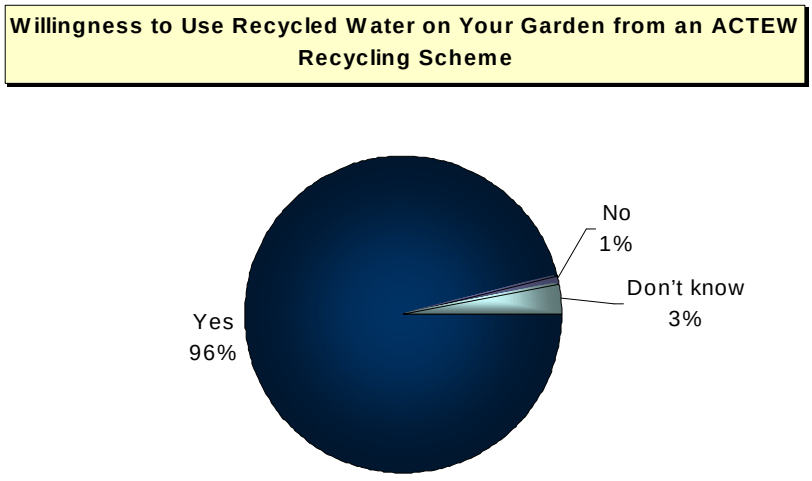
Perceptions of chlorine in the drinking water

Households were more likely to 'strongly agree' that 'they put far too much chlorine in your drinking water' the less favourably they rated their overall water supply. Specifically, only 2% of those rating their water supply as 'excellent' 'strongly agreed' with this statement, which increased to 11% among those rating their water supply as 'very good', and then up to 15% for rating it as 'excellent'.

Consistent with this pattern, perceptions were less favourable among:

- Those who rated ActewAGL less favourably overall; specifically, only 13% of those rating ActewAGL as 'excellent' 'strongly agreed' with this statement, which increased to 30% among those rating it as 'very good', and then up to 36% for rating it as 'excellent'.

- Households that rated their water quality less favourably; specifically, only 10% of those rating their water quality as 'excellent' 'agreed strongly' with this statement, which increased to 26% among those rating it as 'very good', and then up to 41% for those rating it as 'excellent'.

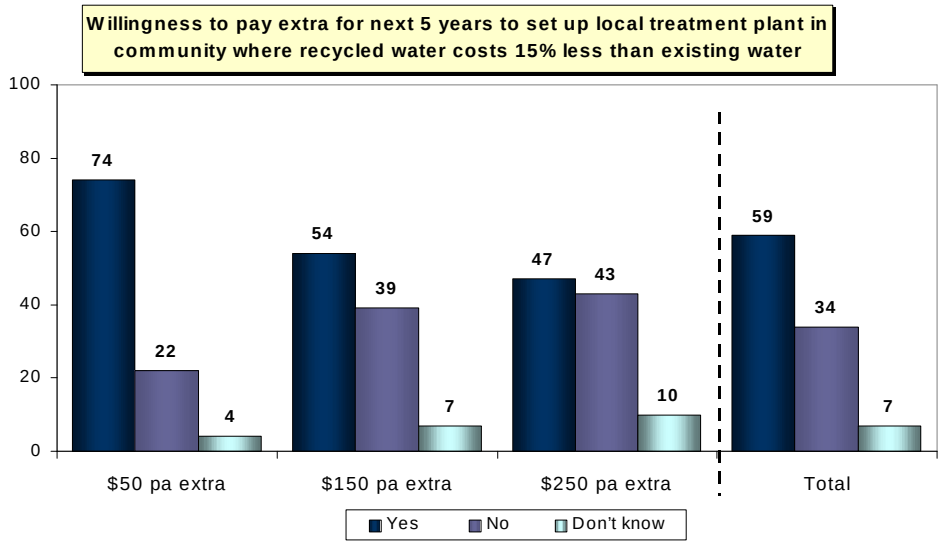


Base: n=240

A9. Would you be willing to use recycled water on your garden if it came from an ACTEW recycling scheme? (SINGLE RESPONSE)

Almost all households (96%) noted their 'willingness to use recycled water for the garden if it came from an ACTEW recycling scheme'.

For those respondents favourably disposed toward the use of recycled water for gardens, a number of specific water recycling concepts were put forward at a range of different prices to ascertain the level of willingness to pay for each. The results for each of these is discussed next.



Base: Treatment plant in community $50 n=85; $150 n=83; $250 n=68; Total n= 236

A10a. I'd like you to imagine the idea of ACTEW building a local treatment plant which treats sewerage from several dozen households located around you… would be virtually noiseless ..water… not drinkable. They would install new pipes to make this water available to you for use in your garden, The price of this recycled water would be15% less than the price of your existing drinkable water. No changes would be made to your current drinkable water or its price. Would you be willing to pay an additional $… per year for the next 5 years to pay for setting up this scheme?

Householders were initially asked to:

> ***… imagine the idea of ACTEW building a local treatment plant which treats sewerage from several dozen households located around you. The plant would be virtually noiseless, and be located discretely in your neighbourhood. Most of it would be underground with very little of it visible. The water coming from the treatment plant would NOT be drinkable. They would install new pipes to make this water available to you for use on your garden. The price of this recycled water would be 15% less than the price of your existing drinkable water. No changes would be made to your current drinkable water or its price. Would you be willing to pay an additional $<PRICE> per year for the next 5 years to pay for setting-up this scheme?***

Approximately one third of respondents were each exposed to only one of the following three prices: $50, $150, $250.

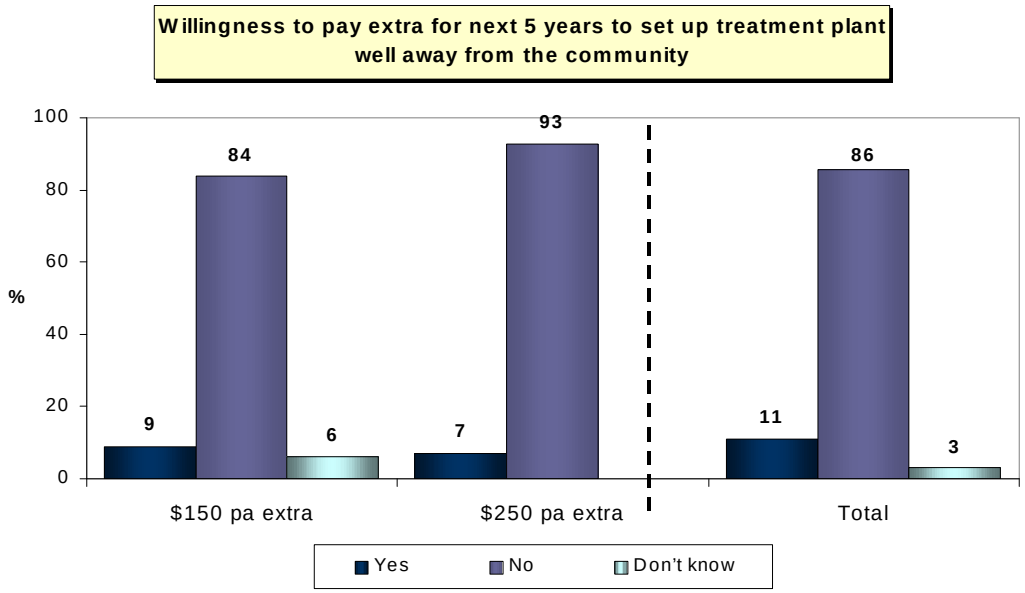
Willingness to pay extra for the next five years to 'set up a local treatment plant in the community where recycled water was offered at a cost of 15% less than existing water' varied depending on the cost level presented.

The willingness of householders to pay for this scheme was highest at $50 per annum extra (74%). However, the proportion of householders willing to pay for the set-up of this scheme dropped off to around 50% when the annual fee was increased to $150 (54%) or $250 (47%).

Overall, across the three price points, an average of 59% of respondents were willing to pay

extra to support the set up of this scheme.

Few respondents said ‘don’t know’ in relation to their views of this scheme; almost all were either willing to support it or not.



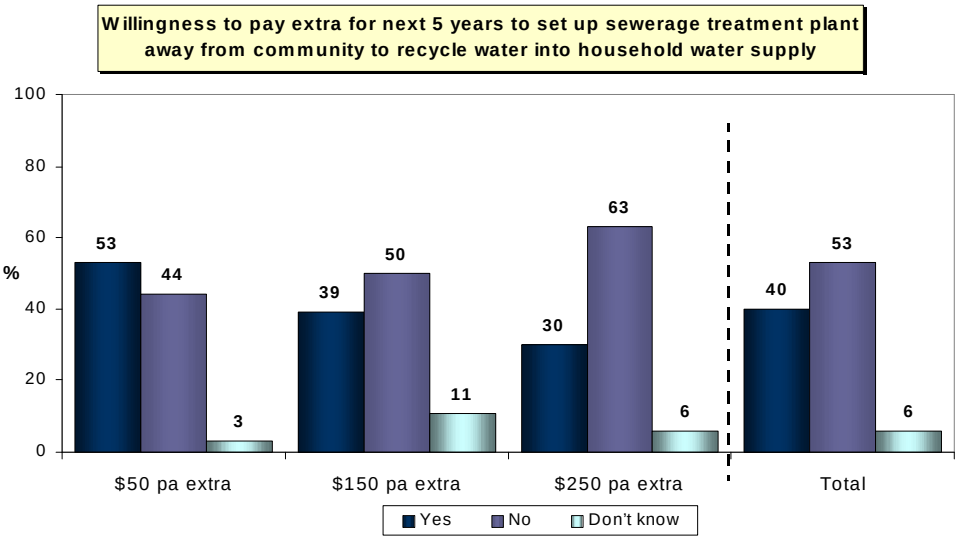
Base: Treatment plant away from community: $150 n=32; $250 n=29; Total n= 80. (nb: sample size too small at $50 for separate reporting n=19)

A10b. [IF NO TO TREATMENT PLANT IN COMMUNITY IDEA] What would your answer be if that treatment plant was build well away from the community? Would you be willing to pay an additional $... per year for the next 5 years to pay for setting up this scheme?

.

The location of the treatment plant appeared to play little role in householder favourability toward this scheme. Of those 'not' willing to pay for this scheme, locating the treatment plant 'well away from the community' gained a swing of around 10% in terms of willingness to pay for this scheme (translating to a gain of about 3% on top of those willing to pay for the scheme when it is located 'within' the community).

While the sample size was too small to examine these results for the $50 option, results did not differ significantly between the $150 and $250 options.



Base: Treatment plant for drinking water: $50 n=79; $150 n=64; $250 n=93; Total n= 236

A11a. I'd like you to imagine the idea of ACTEW building a treatment plant well away from the community, which treats sewerage. The recycled water would be treated so that it meets strict health standards and in fact WOULD be suitable for drinking. This recycled water would then become part of your existing water supply. Would you be willing to pay an additional $… per year for the next 5 years to pay for setting up this scheme?

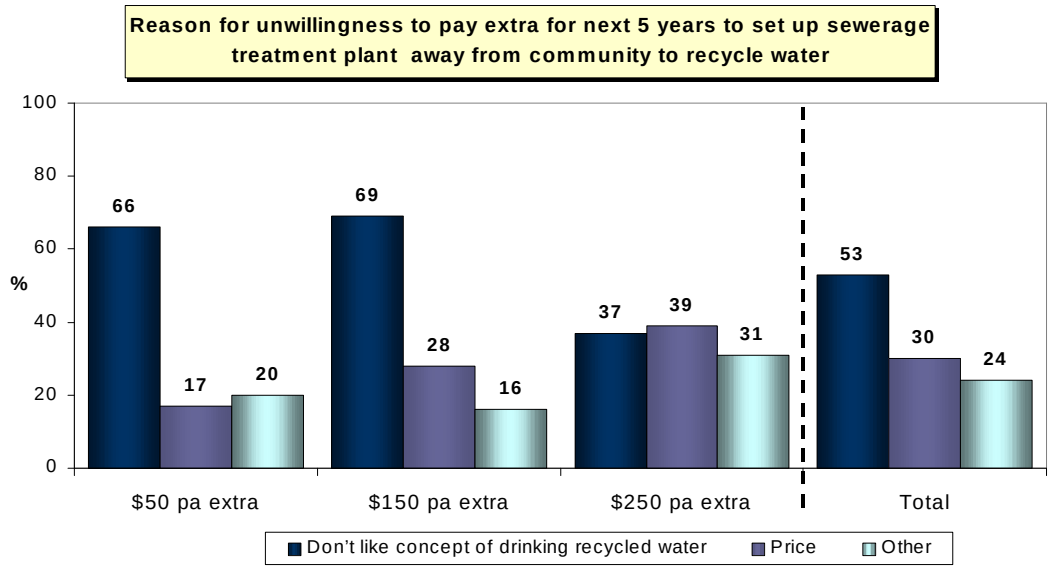
The second idea to which householders were exposed was:

> ***… imagine the idea of ACTEW building a treatment plant well away from the community which treats sewerage. The recycled water would be treated so that it meets strict health standards and in fact <u>WOULD be suitable for drinking</u>. This recycled water would then become part of your existing water supply. Would you be willing to pay an additional $<PRICE> per year for the next 5 years to pay for setting-up of this scheme?***

Approximately one third of respondents were each exposed to only one of the following three prices: $50, $150, $250.

Of the three ideas tested, the lowest level of favourability was associated with this idea of 'setting up a sewerage treatment plant well away from the community but recycling the water to a drinkable standard and adding it back into the existing water supply'. Only about half (53%) of householders were willing to pay $50 per annum for the next 5 years to set-up this scheme with 44% saying they would 'not' be willing to do so. This level of willingness to pay dropped off in about 10% point increments as the annual set-up fee was increased to $150 (39%) and then to $250 (30%).

Overall, across the three price points, an average of only 40% of respondents were willing to pay extra to support the set up of this scheme. Again few responded with a 'don't know' in relation to their views of this scheme; almost all were either willing to support it or not.

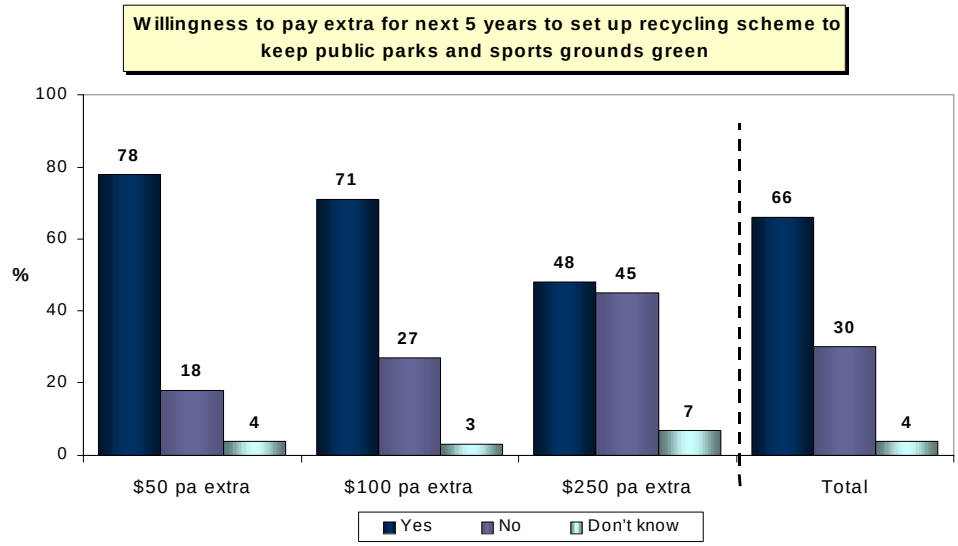


Base: Unwilling to pay for sewerage treatment plant for recycling water: $50 n=35; $150 n=32; $250 n=59; Total n= 126

A11b. [IF UNWILLING TO PAY FOR SEWERAGE TREATMENT PLANT FOR RECYCLING WATER IDEA] - Why is that ?

Those unwilling to pay extra for the sewerage treatment plant for recycling water to a drinkable standard were asked their reasons for being 'unwilling'.

The predominant reason for not being willing to pay for the second scheme was a 'dislike of the concept of drinking recycled water', although 'price' became an equally important reason at the '$250 extra per annum' set-up fee level.



Base: Willingness to pay for recycled water for parks: $50 n=82; $100 n=79; $250 n=75; Total n= 236

A12. The final idea I'd like your opinion on is the use of recycled water on PUBLIC parks and sports grounds. This would ensure that Canberra's public parks and sports grounds would be lush and green even during drought times, Would you be willing to pay $… per year extra on your water bill, for the next 5 years, to fund the development of a water recycling scheme for use on public parks and sports grounds to keep them green?

The final idea put forward to householders was:

> ***… I'd like your opinion on the use of recycled water on only PUBLIC parks and sport grounds. This would ensure that Canberra's public parks and sports grounds would be lush and green for public use even during drought times. Would you be willing to pay $<AMOUNT> per year extra on your water bill, for the next 5 years, to fund the development of a water recycling scheme for use on public parks and sports grounds to keep them green?***

Approximately one third of respondents were each exposed to only one of the following three prices: $50, $100, $250.

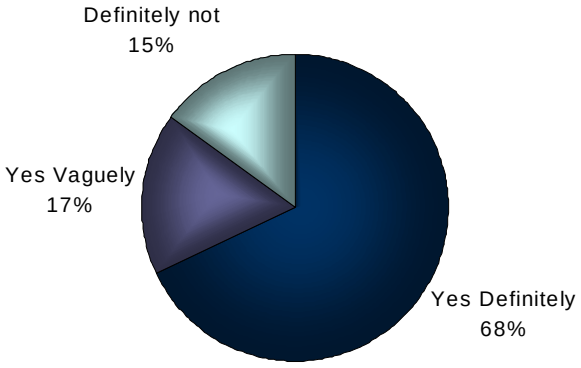
There were high levels of willingness to support a scheme for using recycled water on PUBLIC parks and sports grounds.

Among households, 78% and 71% acknowledged a willingness to pay $50 and $100 respectively per annum for 5 years to fund this scheme. This dropped back to just under half (48%) when the fee was $250 per annum.

Overall, across the three price points, an average of 66% of respondents were willing to pay extra to support the set up of this scheme.

Once again few respondents said 'don't know' in relation to their views of this scheme; almost all were either willing to support it or not.

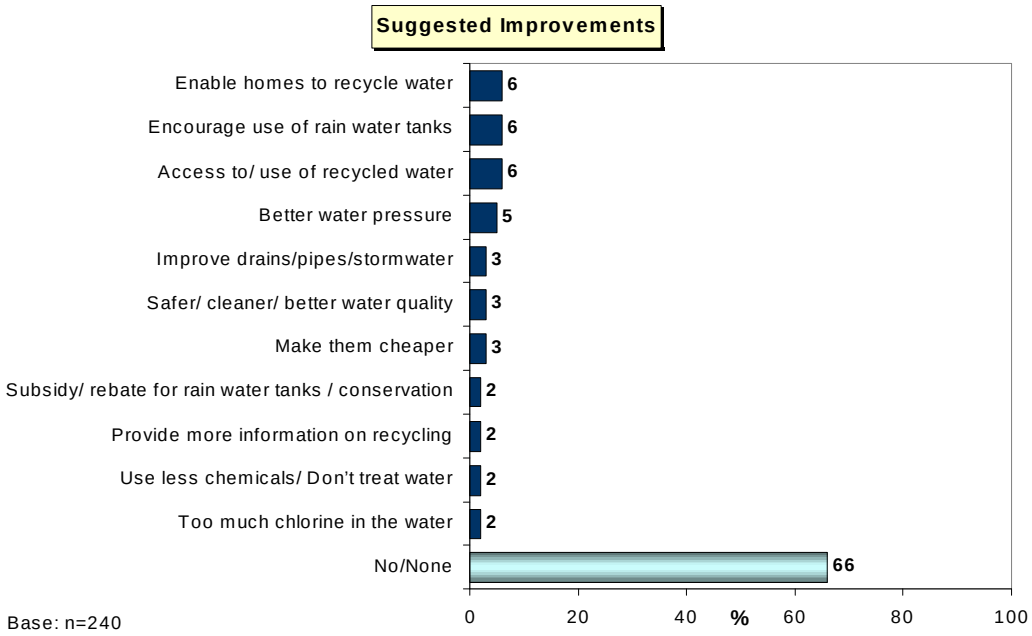
Recollection of Hearing/Seeing Recent Drought-Related Advertising or Other Information by ACT Government or ACTEW recently



Base: n=240

A13. Do you recall hearing or seeing any drought-related advertising or other information by the ACT government or ACTEW recently? Would you say….(SINGLE RESPONSE)

'Drought-related advertising or other information by the ACT government or ACTEW' was claimed to have been 'definitely' recalled by two thirds (68%) of respondents, whilst an additional 17% noted a 'vague' recollection.

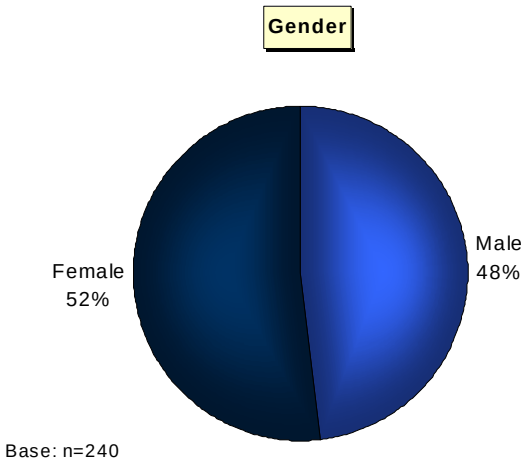


A14. Are there any improvements that you would like to see made to the water supply or sewerage services to your home? (MULTI. RESPONSE)

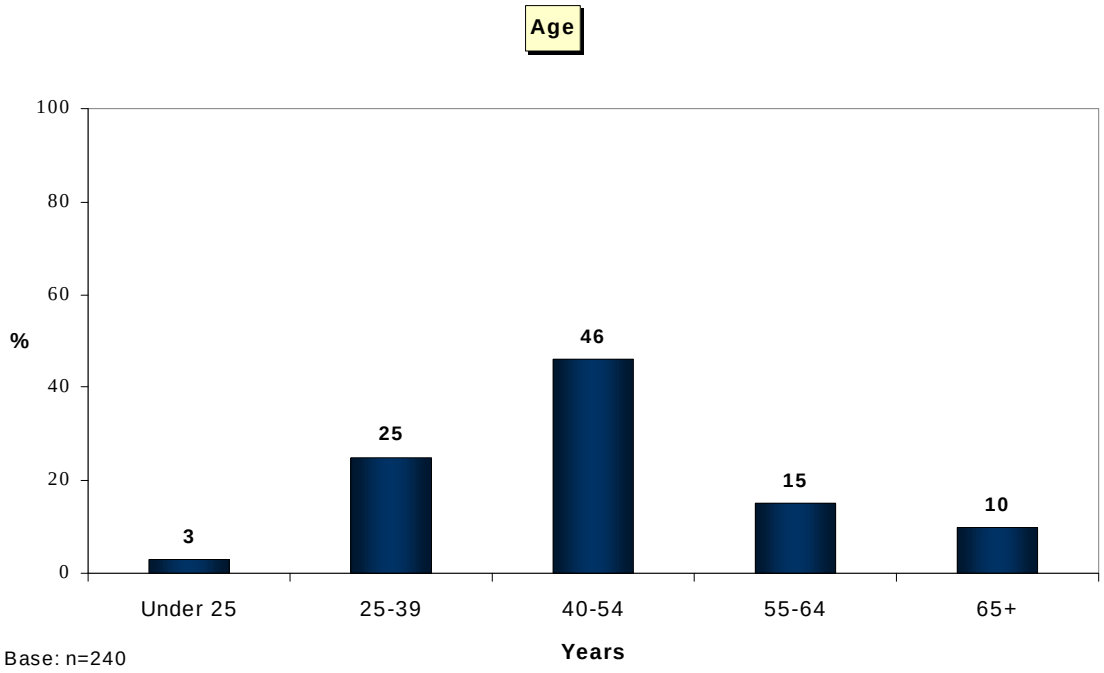
'No' improvements to the water supply and sewerage services was considered necessary by the majority of respondents (66%).

The most common suggestions related to recycling: 'enable homes to recycle water' (6%), 'access to / use of, recycled water' (6%), and 'provide more information on recycling' (2%).

T.1.4. Respondent Profile

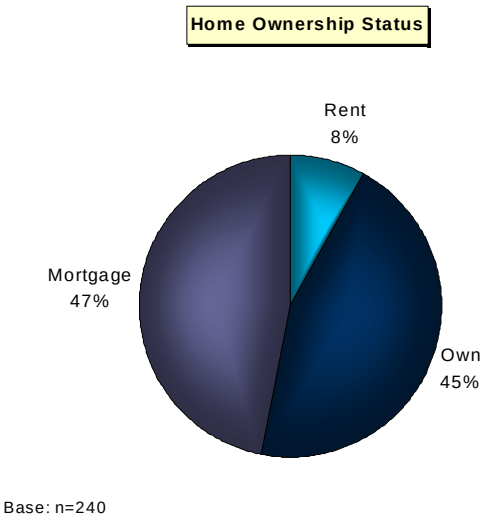


The gender split between males and females interviewed was approximately even.



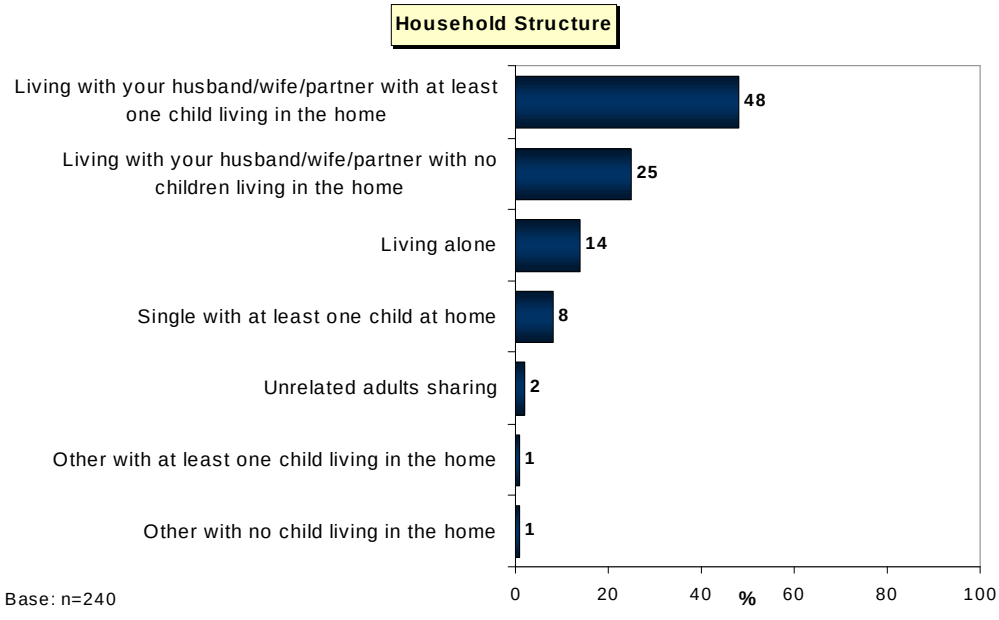
D2. First can you tell me into which of the following age groups you belong? (SINGLE RESPONSE)

Nearly half of household respondents were aged between 40 and 54; one quarter were older.



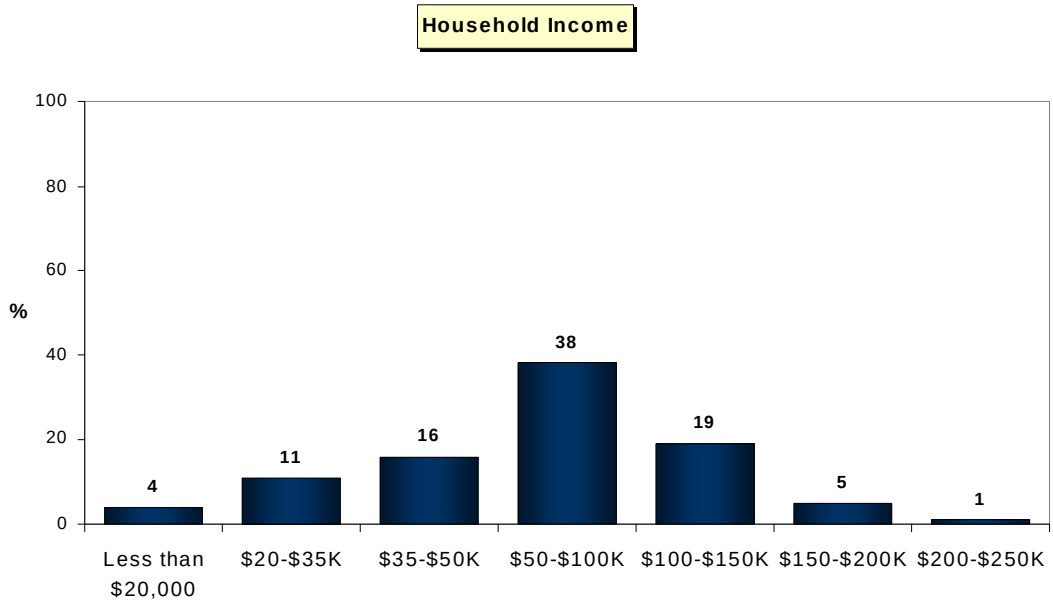
D3. Do you currently Rent, Own, or have a Mortgage on the home in which you live? (SINGLE RESPONSE)

A total of 45% owned their own home outright, and a further 47% were home owners with a mortgage. Only 8% were renters.



D4. And which of these best describes your household? (SINGLE RESPONSE)

About three quarters of those interviewed comprised households with couples; most of these also had at least one child living in the home, while 14% lived alone.

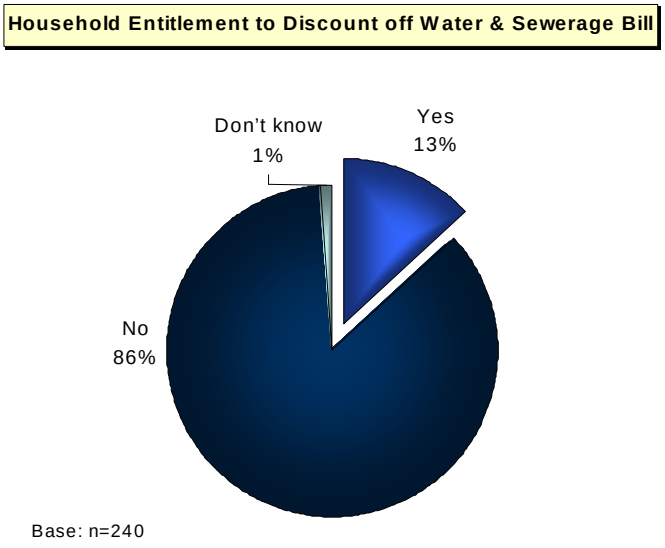


Base: n=240

D5. [Single adult households] Would your personal income from all sources before tax be under $100,000 or over $100,000? Would that be... (SINGLE RESPONSE)

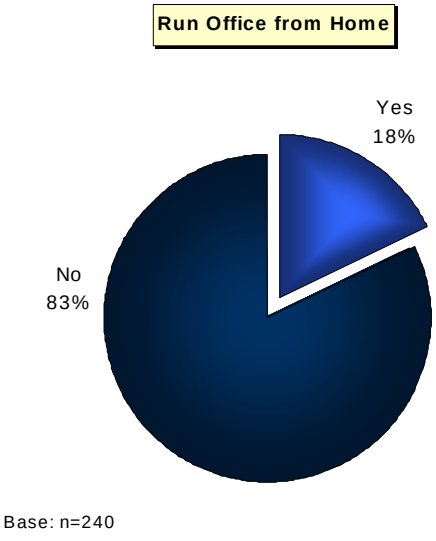
D5. [Partnered adult households] Would the combined income of yourself and your wife/husband/partner, from all sources before tax be under $100,000 or over $100,000? Would that be... (SINGLE RESPONSE)

The majority of households had incomes in excess of $50,000 per annum; 1% had a household income in excess of $250,000 per annum.



D6. Is your household currently entitled to any type of discount off your Water and Sewerage bill? (SINGLE RESPONSE)

Thirteen percent of households interviewed were entitled to a discount off their water & waste-water bill.



D7. Do you or your wife/husband/partner currently run a home office from your home? (SINGLE RESPONSE)

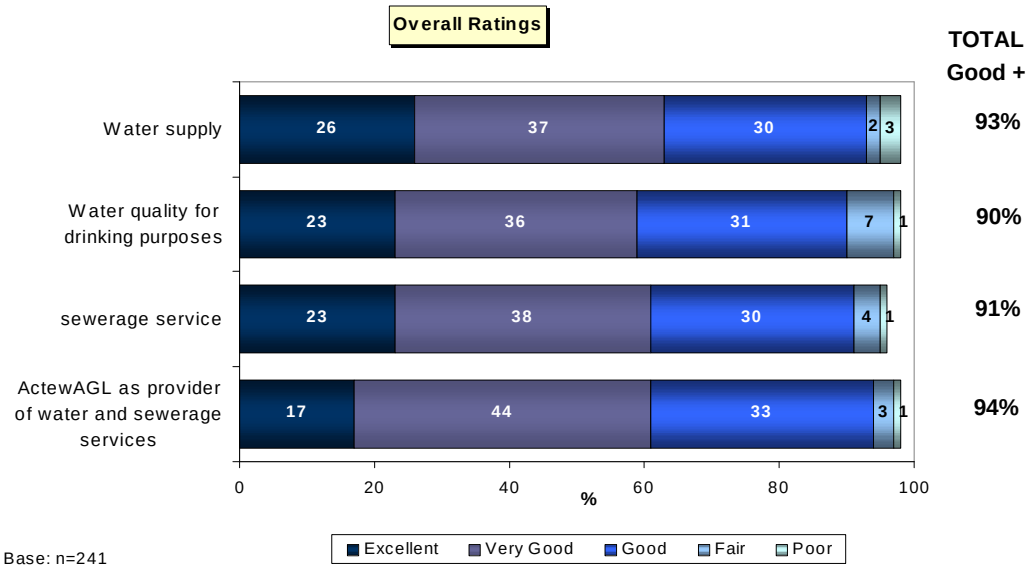
Eighteen percent had member of the household running a home office from their home.

T.2. Water and Waster-Water Commercial

In order to assist with analysis and interpretation of differences between industry subgroups, industries were grouped into five industry sectors to provide subgroups of sufficient sample size. These included the following:

- Services – comprising Australian Bureau of Statistics (ABS) segments including 'property and business services', 'finance & insurance', 'personal & other services'
- Sales – comprising ABS segments including 'retail trade' and 'wholesale trade'
- Grow / Build - comprising ABS segments including 'construction', 'manufacturing', and 'agriculture, forestry, fishing & mining'
- Government & Infrastructure - comprising ABS segments including 'transport & storage', 'communication services', 'government administration', 'education' and 'health & community'
- Hospitality - comprising ABS segments including 'accommodation & restaurants' and 'cultural and recreational'

T.2.1. Overall Ratings



Base: n=241

O1. Firstly, overall how would you rate the water supply to your site currently supplied by ACTEW? Would you say it was….(SINGLE RESPONSE)

O3. And overall how would you rate the quality of the water supplied to your site for drinking purposes? Would you say it was (SINGLE RESPONSE)

O5. And now what about sewerage services, this means taking sink water and sewerage away from your site, and treating it. Overall, how would you rate the sewerage service for your site? Would you say it was…..(SINGLE RESPONSE)

O7. And overall how would you rate ActewAGL as the provider of water and sewerage to your site? Would you say… (SINGLE RESPONSE)

Ratings were very favourable across the board among businesses with respect to overall perceptions of:

- The water supply
- The water quality for drinking purposes
- Sewerage services, and
- ActewAGL as provider of water and sewerage services.

Ratings of 'good' or better were at least 90% for all four aspects noted above; in fact the level of 'excellent' ratings was greater than one in six across the board. Further, 'poor' ratings did not exceed 3% in any instance.

Perceptions of these four areas were positively related, such that organisations who are more positive in one area are likely to be more positive in others, and visa versa. Specifically:

- Organisations rating the water quality as 'very good' or better were significantly more likely to rate the overall water supply as 'very good' or better (81%) compared with only 35% rating the water supply as only 'good'.
- Similarly, those rating the sewerage service as 'very good' or better were significantly more likely to rate the overall water supply as 'very good' or better (84%) compared

with only 17% among those rating the water supply as only 'good'.

- Finally in relation to the water supply, those rating ActewAGL as 'very good' or better were also significantly more likely to rate the water supply as 'very good' or better (84%) compared with only 29% rating it as only 'good'.

- Those rating their overall sewerage services as 'very good' or better were significantly more likely to also rate the water quality as 'very good' or better (73%) compared with only 31% rating their water quality as only 'good'.

- Similarly results were evident for those rating ActewAGL overall as 'very good' or better. These organisations were significantly more likely to rate the water quality as 'very good' or better (76%) compared with only 32% rating the water quality as only 'good'.

- Finally, organisations rating ActewAGL as 'very good' or better were significantly more likely to rating their sewerage service as 'very good' or better (81%) versus only 27% rating their sewerage service as only 'good'.

Significant subgroup differences identified are discussed below.

Perceptions of the water supply

Perceptions of the water supply were most favourable among the 'government & infrastructure' industry sector, those experiencing fewer water pressure problems, and those running their business from a dedicated office. Specifically:

- The 'government & infrastructure' sector was significantly more favourable toward the water supply (73% rating it as 'very good' or better, and 45% rating it as 'excellent'), than were the 'sales' or 'services' industry sectors (only 48% of the 'services' sector rating it as 'very good' or better, and only about 20% of the 'sales' and 'services' sectors rating the water supply as 'excellent').

- Those who claimed to have 'never' experienced water pressure problems were more likely to rate the water supply as 'good' or better (96%, versus 80% among those who have experienced pressure problems). Conversely, they were also less likely to rate the water supply as 'poor' (1% compared with 13% for those who had experienced problems).

- Organisations running an office from home were also more likely to rate their water supply as 'poor' (6%) compared with those operating out of a dedicated office (1%).

Perceptions of the water quality for drinking purposes

Perceptions of the water quality were most favourable among the 'government & infrastructure' and the 'grow/build' industry sectors, as well as larger organisations.

Specifically:

- The 'government & infrastructure' and 'grow/build' industry sectors were significantly more likely to rate the water quality as 'excellent' (40% and 33% respectively) compared with the 'sales' and 'services' sectors (16% and 14% respectively).

- Larger organisations (10 or more employees) were significantly more like to rate the water quality as 'good' or better (100%) compared with smaller organisations (88%).

Perceptions of the sewerage service

Perceptions of the sewerage service were also most favourable among the 'government & infrastructure' and the 'grow/build' industry sectors, as well as larger organisations. Specifically:

- As was the case for water quality, the 'government & infrastructure' and 'grow/build' industry sectors were significantly more likely to rate the sewerage service as 'excellent' (42% and 34% respectively) compared with the 'sales' and 'services' sectors (16% and 15% respectively).

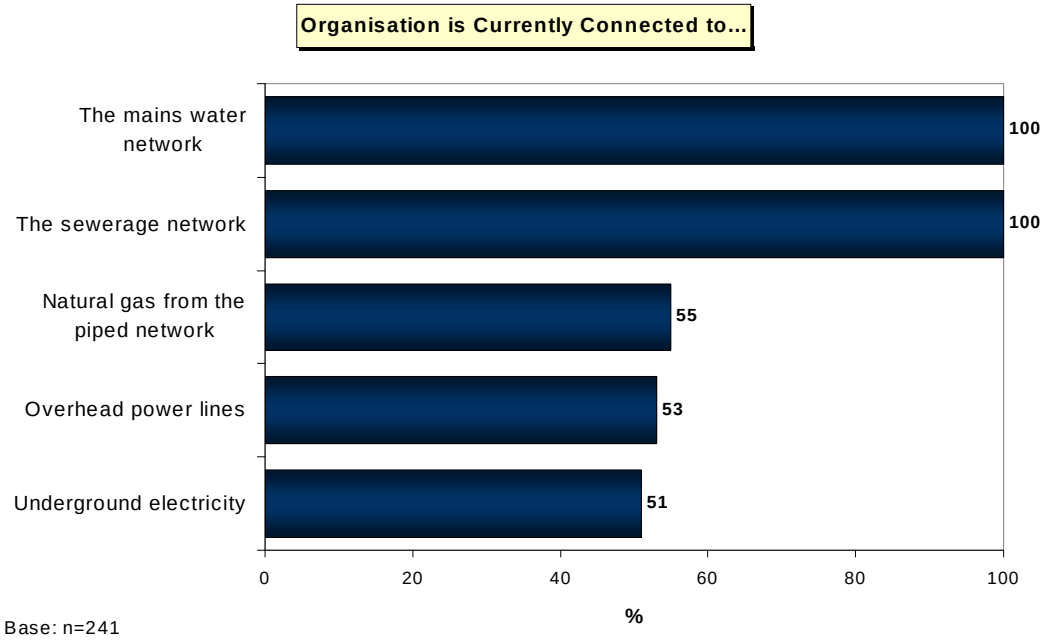
- Organisations that had 'never' experienced a sewerage overflow were significantly more likely to rate their sewerage service as 'good' or better (95%) compared with organisations that had experienced an overflow (79%).

Perceptions of ActewAGL as provider of water and sewerage services

Consistent with perceptions of each of ActewAGL's water and waste-water services, perceptions of 'ActewAGL' as the provider of these was most favourable among the 'government & infrastructure' industry sector - the 'government and infrastructure' industry sector was significantly more likely to rate ActewAGL as 'excellent' (39%) than were other sectors (only 9% for 'services', 13% for 'sales' and '19% for the 'grow/build' industry sectors).

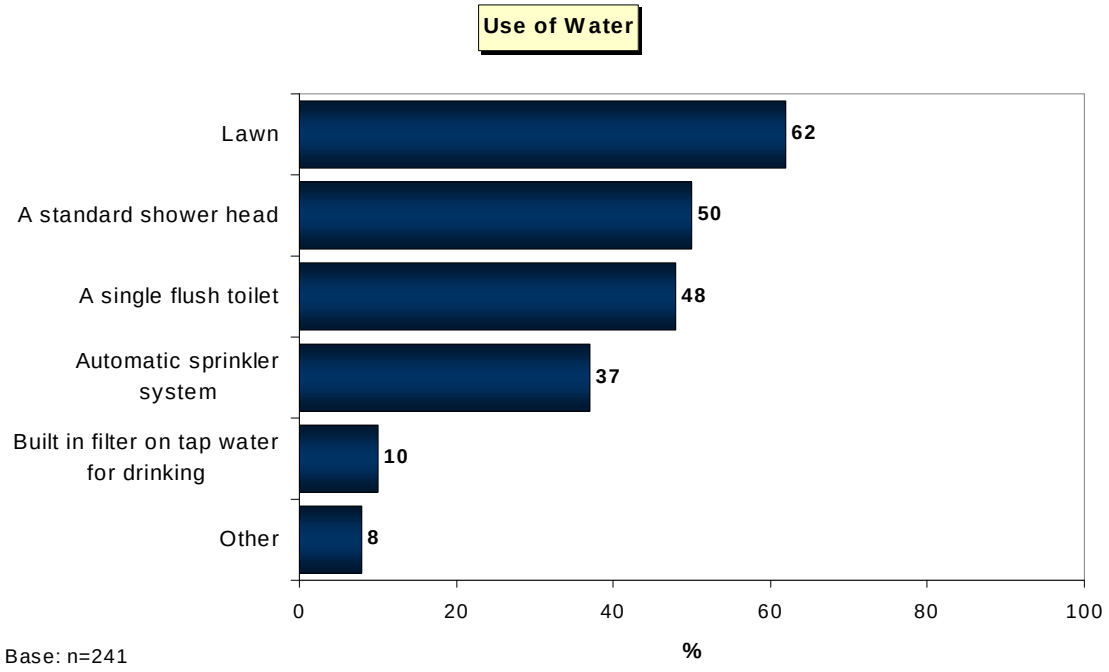
Organisations who had 'never' experienced water pressure problems were also significantly more likely to rate ActewAGL as 'good' or better (97%) compared with their counterparts who had such experiences (82%).

T.2.2. Behaviour



R1. Is your organisation either at this site or any other site you may have in the ACT currently connected to…..(MULTIPLE RESPONSE)

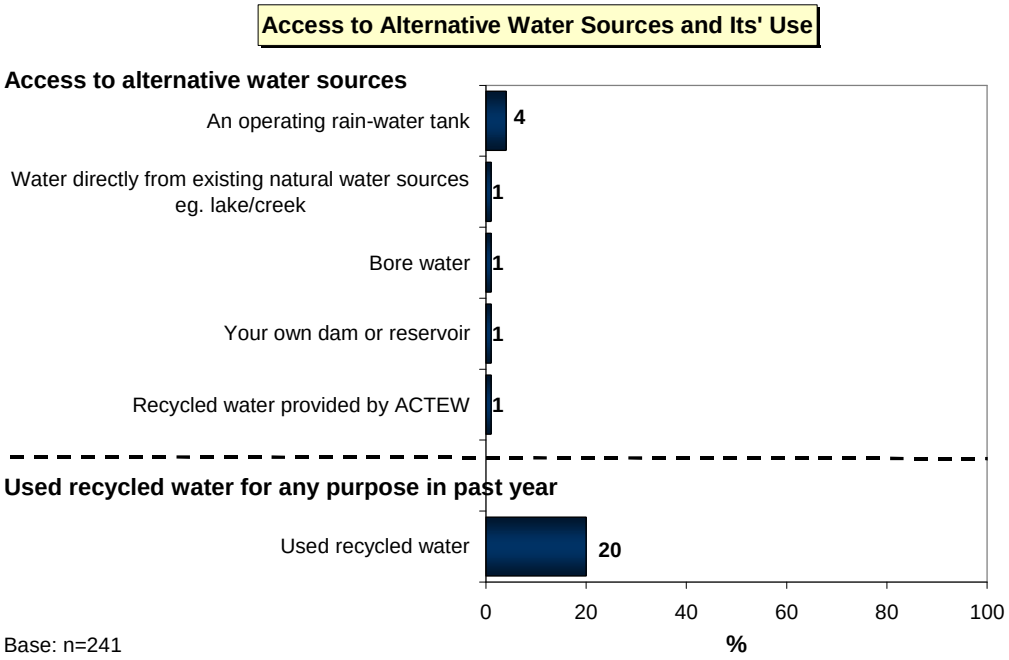
Of those organisations connected to the mains water network and the sewerage network, just over half were found to be also connected to natural gas from the piped network. All organisations were found to be connected to either overhead power lines or to underground electricity, with approximately an even spilt between these two connection forms.



Base: n=241

B1. Do you have any of the following at your site? … (MULTIPLE RESPONSE)

Almost two thirds of organisations watered a lawn (62%). Standard showerheads were used by half the organisations interviewed, as were single flush toilets (48%). Over one third claimed to have an automatic sprinkler system (37%), and 10% claimed to have a built-in filter on tap water for drinking.

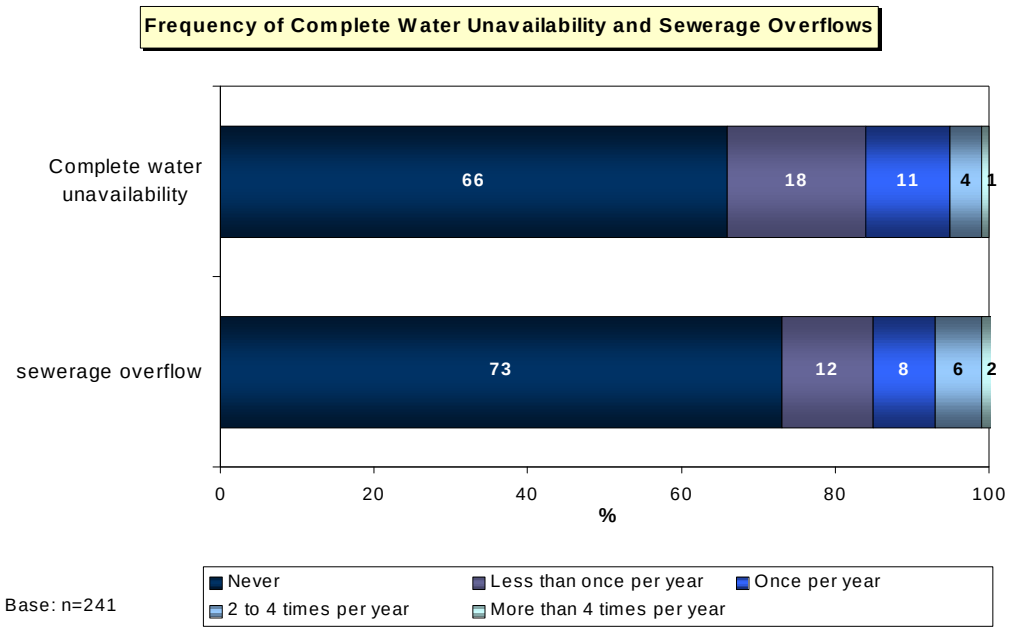


B2. Do you have access to any of the following alternative sources of water to mains water at your site? (MULTIPLE RESPONSE)

B3. In the past year have you used recycled water, or water from an alternative source to mains water, at all for any purpose at your site? (MULTIPLE RESPONSE)

The level of access to alternative sources of water to mains water was very small, with only an 'operating rainwater tank' being utilised by over 1% or organisations (4%).

However, one in five organisations claimed to have used recycled water, or water from an alternative source to mains water, in the past year. Those who had 'never' had a 'water supply interruption' were less likely to have used recycled water in the past year (16%) compared to those who claim to experience such interruptions (30%).



B4. About how often would you say the water has completely gone off at your site? Would you say…..(SINGLE RESPONSE)

B11. About how often would you say you have experienced a sewerage overflow at your site or in the surrounding neighbourhood? Would you say…..(SINGLE RESPONSE)

Perceptions of complete water unavailability

Two thirds of the organisations interviewed reported to have 'never' had the water go off completely at their site. Where this did occur, the incidence was perceived to be rare: 29% said this occurred 'once' or 'less than once' per year, with only 5% reporting a water cut-off 'twice or more' per annum.

Water supply interruptions were significantly more commonly reported among:

- Larger organisations (those with 10 or more employees, averaging .7 interruptions per annum), compared with small organisations (those with up to 5 employees, averaging .3 interruptions per annum).

- Those who had used recycled water in the past year; specifically 49% of those had used recycled water had experienced a supply interruption compared with only 30% of those who had not.

- Those who said they had experienced water pressure problems (average of .6 supply interruptions per annum) compared with those who had 'never' experienced pressure problems (average of .3 interruptions per annum).

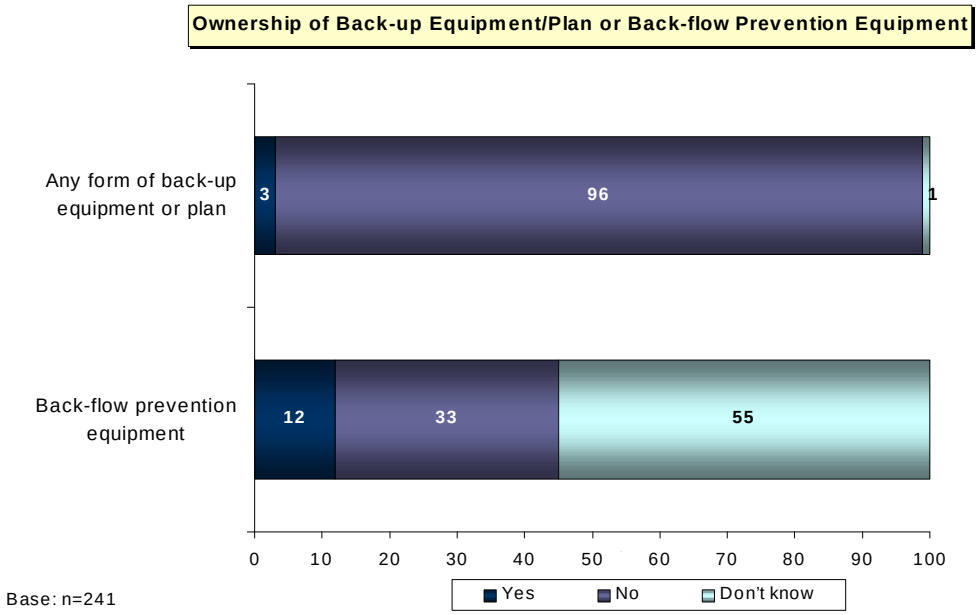
Perceptions of sewerage overflows

Sewerage overflows were rarely reported with 73% of organisations saying they had 'never' experienced this, and another 20% saying they've only had this occur 'once' or 'less than once' per year. A total of 7%, however, reported this experience '2 or more' times per annum.

Sewerage overflows were significantly less commonly reported among:

- The 'grow/build' industry sector (90% 'never' experiencing an overflow) than the 'government & infrastructure' and 'services' sectors (71%and 62% respectively 'never' having had the experience).

- Smaller organisations (those with fewer than 10 employees, with 76% having 'never' experienced an overflow), than larger organisations (with 56% 'never' experiencing an overflow').

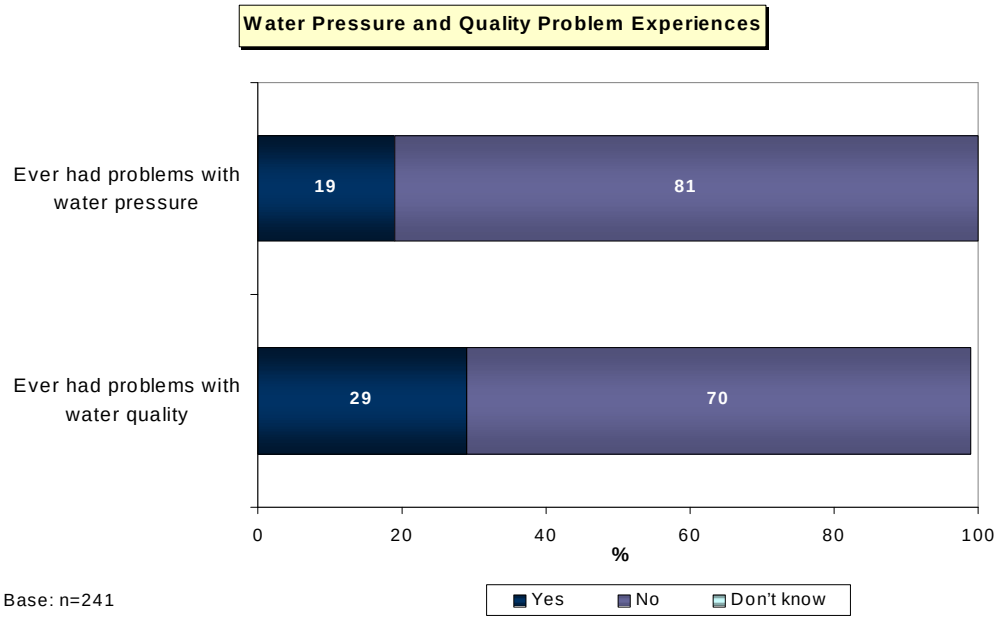


B5. Do you have <u>any form</u> of backup equipment or backup plan already in place in case the water supply was completely turned off at your site? (SINGLE RESPONSE)

B12. As far as you know, does you site have back-flow prevention equipment? (SINGLE RESPONSE)

<u>Backup equipment or plans</u> in case the water supply was completely turned off, was virtually non-existent; only 3% of organisations claimed to have any such plans or equipment. No sub-group differences were able to be detected here due to the small sample size of 'back-up' owners. The types of 'back-up' equipment/plans mentioned included 'rainwater tank', 'special water saving containers/bottles', 'bore water', 'drinking water tanks', and 'bottled drinking water'.

<u>Back-flow prevention equipment</u> was more prevalent (with 12% claiming to have it). However, there was a general lack of knowledge on this aspect with 55% responding that they 'don't know' whether or not they have such equipment.



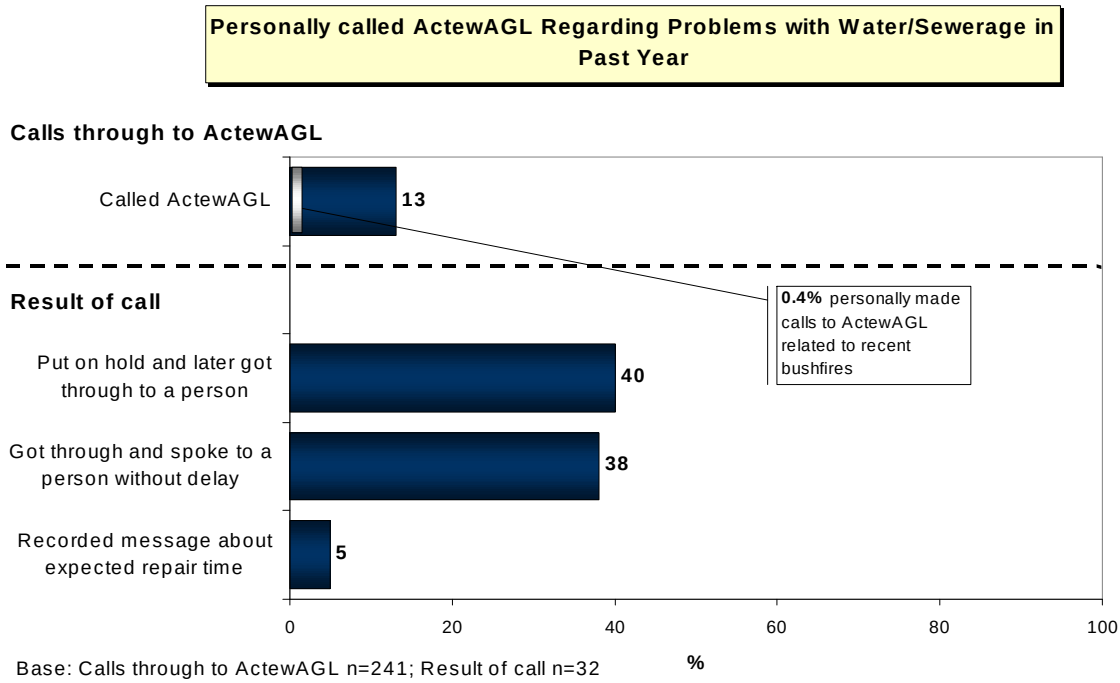
B9. Have you ever had any problems with water pressure at your site? Would you say….(SINGLE RESPONSE)

B10. Have you every had problems with the quality of the water coming into any of your sites in terms of smell, taste or clarity? ….(SINGLE RESPONSE)

Problems with either 'water pressure' or 'water quality' (in terms of smell, taste or clarity) were not common, with 81% and 70% respectively 'never' having experienced these issues.

There was a positive relationship between water pressure problems and water quality problems. Specifically, those who had experienced water pressure problems were significantly more likely to also say they had experienced water quality problems (49% versus only 25% among those who had not experienced water pressure problems).

T.2.3. Attitudes



A1. Firstly, have you PERSONALLY tried to call ActewAGL to report any problems or disruptions to your water supply and sewerage service in the past year? (SINGLE RESPONSE)

A2. Did the call you make to ActewAGL relate to the recent bushfires? (SINGLE RESPONSE)

A4. Which of the following things happened when you called them for the last issue…..? (MULTIPLE RESPONSE)

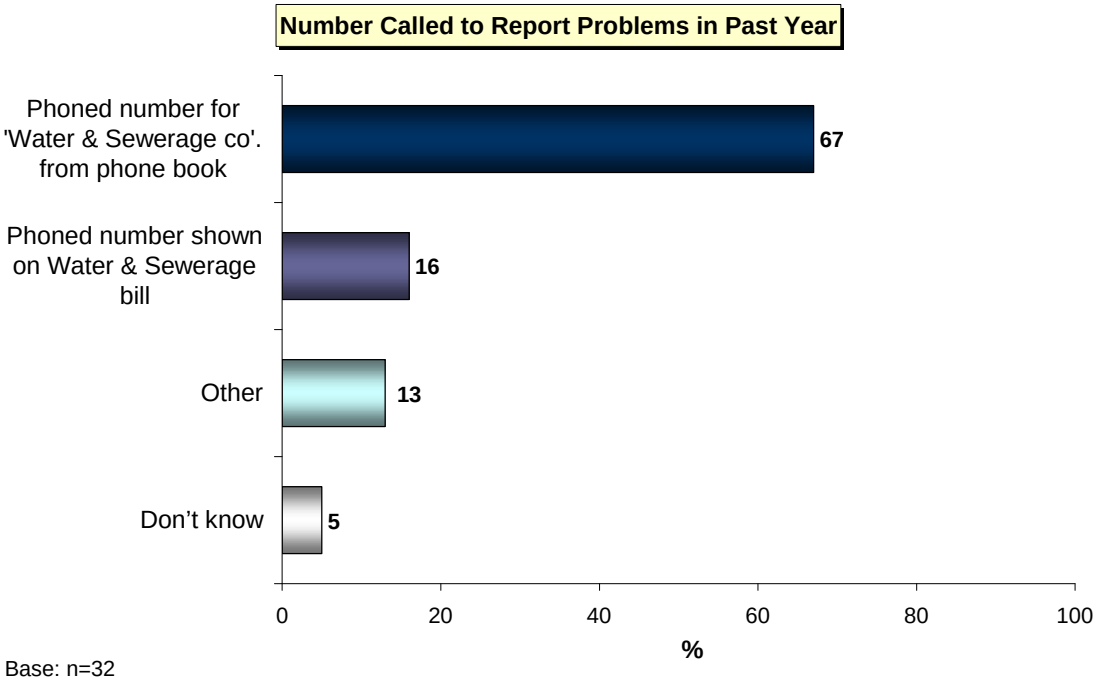
Calls to ActewAGL to report a problem or disruption to the water supply or sewerage service had been personally made in the past year by 13% of respondents interviewed; only .4% of all respondents had made a call relating to the recent bushfires.

Of those who had made a call, 40% were 'put on hold and later got through to a person', with a similar proportion (38%) 'getting through and speaking to a person without delay'. Only 5% claimed to have 'heard a recorded message about expected repair time'.

Calling ActewAGL was significantly more likely among the following subgroups:

- The 'government & infrastructure' sector (23%) compared with the 'sales' industry sector (3%).

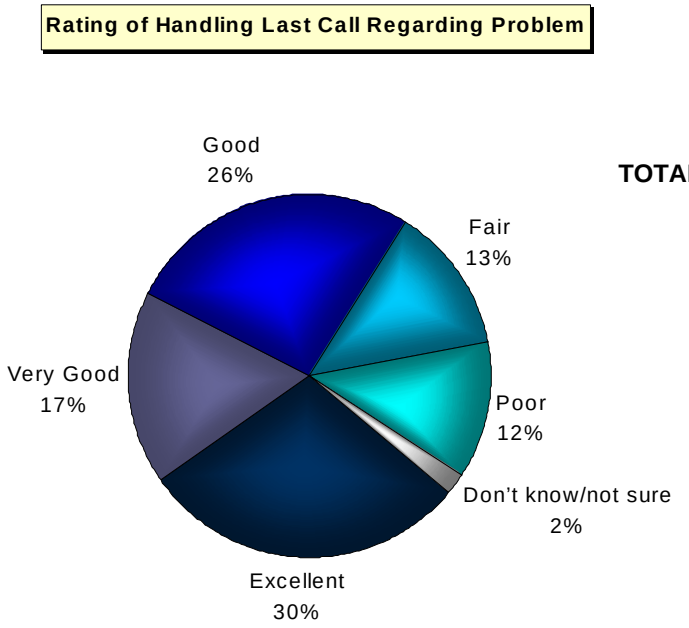
- Organisations that have experienced a water supply interruption (21%) compared with those who have 'never' had such an interruption (10%).



Base: n=32

A3. As far as you can remember, which of the following did you do?.....(MULTIPLE RESPONSE)

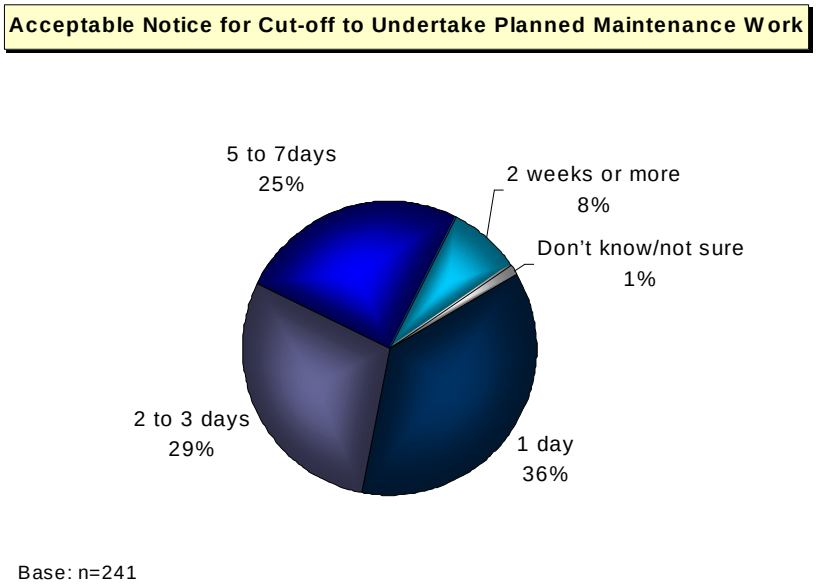
Two thirds (67%) of those who called ActewAGL in the past year to report a disruption got the 'number from the phone book', while 16% got the number from their 'Water and Sewerage bill'. 'Other' sources mentioned included 'Canberra Connect', the 'Internet', a 'fridge magnet' and an 'emergency numbers list'.



Base: n=32

A5. And how would you rate ActewAGL in handling your call on that last occasion? Would you say…..(SINGLE RESPONSE)

Three quarters (73%) of those who had called ActewAGL in the past year in relation to a disruption, rated ActewAGL's handling of that call as 'good' or better. In fact 30% gave ActewAGL an 'excellent' rating. However, 12% did rate the call handling as 'poor'.

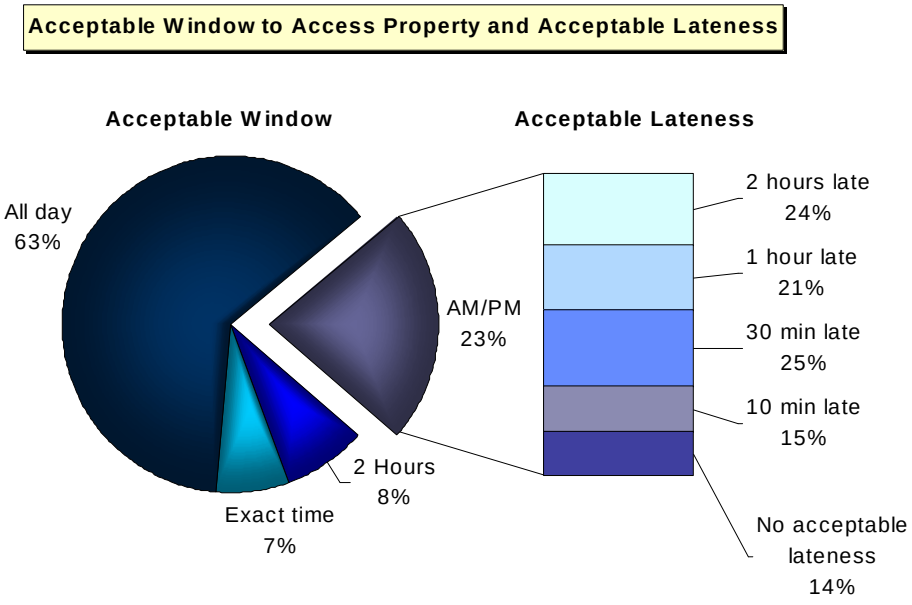


Base: n=241

A6. If ActewAGL needed to cut off the water to do some planned maintenance work, how much notice, if any would you find acceptable? Would you say…..(SINGLE RESPONSE)

Ninety percept of organisations nominated a period of up to one week as being 'acceptable' as the notification period for cutting off the water supply to undertake planned maintenance work; just over one third (36%) considered '1 day' to be 'acceptable', 29% nominated '2 to 3 days' as 'acceptable', with one quarter desiring '5 to 7 days'. Only a minority of organisations (8%) required '2 weeks or more'.

Organisations with a relatively large annual water and waste-water bill size were more likely to require a longer period than those with relatively small bills; specifically, those with a bill size of '$3,000 per annum or more' required an average of 5 days notice while those with bills of 'up to $1,000 per annum' considered an average of 3.6 days to be 'acceptable'.



Base: Acceptable window n=241; Acceptable lateness for am/pm window n=55

A7. If ActewAGL needed access to your property to carry out some planned maintenance work, would…be acceptable to you? (SINGLE RESPONSE)

A8. And how much <u>after</u> that window would you find their arrival to still be acceptable to you? (SINGLE RESPONSE)

Nearly two thirds of organisations (63%) considered an 'all day' window to be 'acceptable' for ActewAGL to access their property to carry out some planned maintenance work. Another 23% however thought a shorter 'morning/afternoon' window was 'acceptable', while 8% insisted on a '2 hour' window and 7% on an 'exact time'.

The following subgroups were the most lenient in that they were significantly more willing to accept an 'all day' appointment window for property access compared with their counterparts:

- Organisations more favourably disposed toward ActewAGL - those rating ActewAGL overall as 'very good' or better (70% nominating an 'all day' window, compared with 52% among those rating ActewAGL as only 'good').

- The 'grow/build' industry sector – 81% nominated 'all day', compared with 51% and 58% respectively for the 'sales' and 'government & infrastructure' sectors.

- Organisations with relatively small annual water and waste-water bills (less than $1,000) with 68% nominating an 'all day' window, compared with 44% among those with large bills ($3,000 or more).

- Those operating a home office (69% nominating 'all day' compared with 56%among

those operating from dedicated business premises).

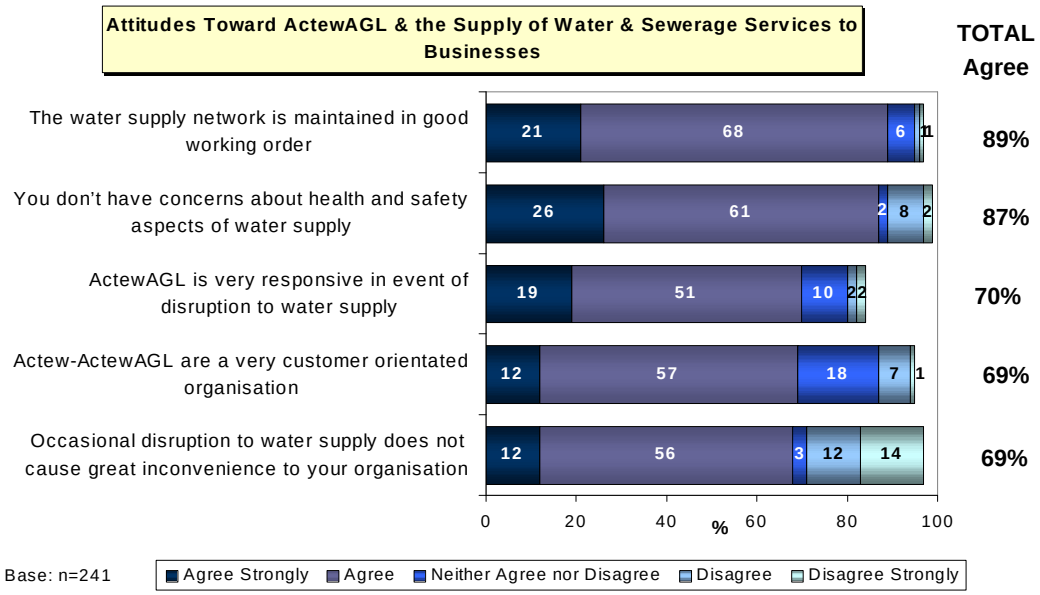
All those who considered a window smaller than an entire day to be 'acceptable' notification for property access, were also asked about the extent of 'lateness' they would accept in meeting that window. Of those stipulating a 'morning/afternoon' window[95] (55 respondents), the vast majority (85%) considered some amount of lateness to be 'acceptable', although the amount of lateness varied considerably:

- between 20% and 25% considered each of '2 hours', '1 hour' and '30 minutes' late to be 'acceptable',

- 15% insisted on '10 minutes', and a similar proportion (14%) on 'no lateness at all'.

[95] Sample sizes were too small to analyse 'acceptable lateness' windows among those choosing appointment windows other than 'morning/afternoon'.

Organisations rated their level of agreement with nine aspects of ActewAGL's service. The five aspects with the most favourable results are shown and discussed below, with results for the remaining four aspects discussed next.



A9. I am now going to read out some statements about water supply and sewerage services t businesses, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that…..[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree (SINGLE RESPONSE)

By far the most favourable responses were attained in relation to 'the water supply network is maintained in good working order' and 'you don't have any concerns about health and safety aspects of water supply', with 'total agreement' at 89% and 87% for these two statements respectively. However, 'total disagreement' was 10% in relation to the latter.

'Total agreement' levels were somewhat lower (around 7 in 10) for the statements:

- 'ActewAGL is very responsive in the event of disruption to water supply'
- 'Actew-ActewAGL are a very customer orientated organisation', and
- 'The occasional disruption to water supply does not cause great inconvenience to your organisation'.

Notable in relation to these latter three statements are the following:

- 16% responded with either a 'don't know' or 'not applicable' in relation to 'ActewAGL being responsive in the event of a disruption'. This probably reflects the limited extent of exposure to water disruptions or other supply problems.

- 'Total disagreement' was at 26% (14% 'strongly disagreeing) that 'disruptions do not cause a great inconvenience'.

Analysis of differences between subgroups has revealed the following to be significant:

Perceptions of the water supply network being maintained in good working order

Perceptions of the 'water supply network being maintained in good working order' were more positive among those more favourably disposed toward ActewAGL, and among the 'government & infrastructure' and 'grow / build' industry sectors. Specifically:

- Those who rated ActewAGL as 'very good' or better were more likely to 'agree strongly' (25%) than were those rating ActewAGL as only 'good' (13%).

- 'Total agreement' was higher among the 'government & infrastructure' and 'grow / build' industry sectors (96% in each case) than it was for the 'sales' sector (78%).

You don't have any concerns about health and safety aspects of the water supply

Health and safety concerns were less prevalent among those more favourably disposed toward ActewAGL and its various water and sewerage services. Specifically:

- Those rating the water supply overall as 'excellent' were more likely to also 'agree' or 'agree strongly' that they have no concerns about the health and safety aspects (96%) than were those who only rated the water supply as 'good' (82%).

- Similarly in relation to overall water quality ratings for drinking purposes, 'total agreement' was higher among those rating their water quality as 'very good' or better (95%) compared those rating the water quality as only 'good' (82%).

- Organisations that rated ActewAGL as 'excellent' were more likely to 'agree' or to 'agree strongly' (98%) than were those that rated ActewAGL as only 'good' (83%).

- 'Strong agreement' was greater among those rating their sewerage service as 'excellent' (38%) compared with those rating it as only 'good' (20%).

Perceptions of ActewAGL being very responsive in event of disruption to water supply

Perceptions of responsiveness in the event of a water supply disruption were more favourable among those more favourably disposed to ActewAGL and the water quality. Specifically:

- Organisations that rated their overall water quality as 'very good' or better were more likely to 'agree' or to 'agree strongly' (78%) than those that rated the water quality as

only 'good' (59%).

- The level of 'strong agreement' increased with higher overall ratings of ActewAGL; specifically, only 9% of those that rated ActewAGL as 'good' 'strongly agreed' with this statement, compared with 21% of those rating it as 'very good', increasing to 40% among those rating it as 'excellent'.

Perceptions of responsiveness were also more favourable among:

- Larger organisations (those with 10 or more employees) - more likely to 'agree strongly' that ActewAGL is very responsive in the event of a disruption (33%) than were smaller organisations (17%);

- Those with larger annual water and waste-water bill sizes (over $1,000) - more likely to 'agree strongly' (26%) than were those with smaller bills (12%).

- Organisations that had 'never' experienced a sewerage overflow - less likely to 'disagree' or to 'disagree strongly' with the statement (ie. were more favourable) (1%) compared with those that 'had' experienced an overflow (9% 'total disagreement').

Perceptions of Actew-ActewAGL being a very customer orientated organisation

Perceptions of 'Actew-ActewAGL being very customer oriented' were more favourable among those more favourably disposed toward ActewAGL and its water and waste-water services. Specifically, 'total agreement' was significantly higher among:

- Organisations that rated their water quality as 'very good' or better (75%) than those rating the water quality as only 'good' (59%).

- Those that rated their sewerage service as 'very good' or better (77%) than those rating the sewerage service as only 'good' (60%).

- Organisations that rated ActewAGL as 'very good' or better (77%) compared with those rating ActewAGL as only 'good' (62%).

Similarly, large organisations (those employing 10 or more) had a more favourable view of 'Actew-ActewAGL's customer orientation' with 88% 'total agreement' with this statement compared with 65% among small organisations (employing fewer than 5 people).

Occasional disruption to water supply does not cause great inconvenience to your organisation

Those least likely to be inconvenienced by a supply interruption included:

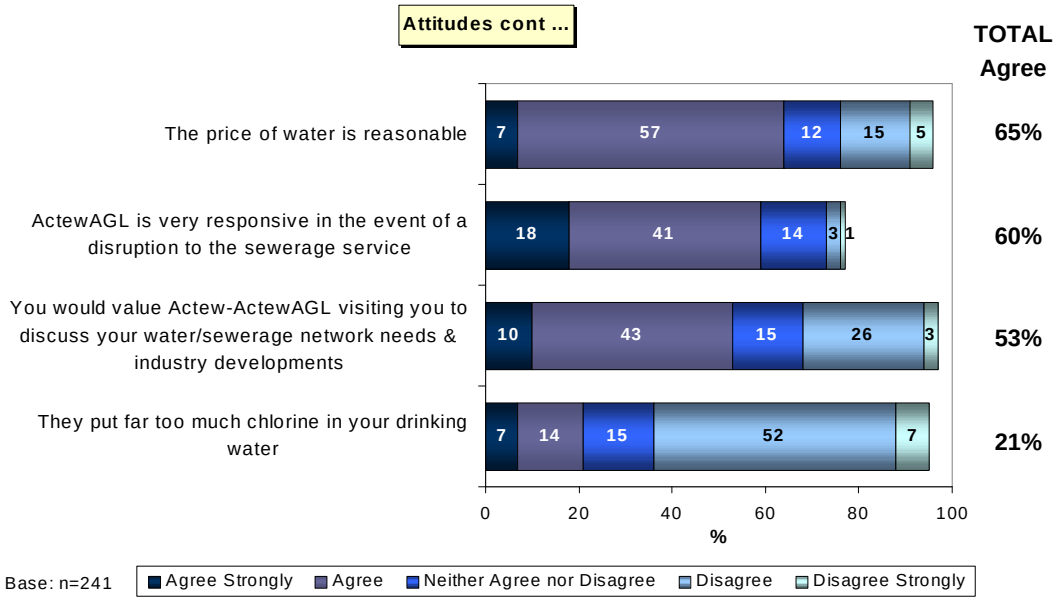
- Organisations that rated their overall water quality as 'very good' or better (74% 'total agreement') compared with those rating the water quality as only 'good' (59%).

- The 'grow/build' and 'services' industry sectors (85% and 80% 'total agreement' respectively) than the 'sales' and 'government & infrastructure' sectors.

- Smaller organisations (fewer than 5 employees; 75% 'total agreement') than large ones (10 or more employees; 45%).

- Those with small annual water and waste-water bills (up to $1,000; 76% 'total agreement') compared with their larger billing counterparts (61%).

- Home office based organisations (80%) than those based in dedicated business premises (57% 'total agreement').



A9. I am now going to read out some statements about water supply and sewerage services t businesses, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that…..[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree (SINGLE RESPONSE

The 'price of water was considered to be reasonable' by two thirds of the organisations interviewed (65%), although the level of 'total disagreement' was 20%.

Slightly fewer 'agreed' or 'agreed strongly' (60%) that 'ActewAGL is very responsive in the event of a disruption to the sewerage service'; here only 4% disagreed in total, although the 22% that responded with either a 'don't know' or 'not applicable' is notable and probably a reflection of the rarity of experiencing such an event.

Just over half (53%) confirmed that they 'would value a visit from ActewAGL' but 28% disagreed in total; nonetheless this indicates a considerable degree of interest in personal visitation.

Chlorine seems to be an issue for a minority with one in five (21%) 'agreeing' or 'agreeing strongly' that 'too much chlorine was being put in drinking water'; 59% disagreed in total.

Significant differences between subgroups are discussed below for each statement:

<u>Perceptions of the price of water as being reasonable</u>

Subgroups most likely to consider the price of water as 'reasonable' were:

- Organisations that rated ActewAGL as 'excellent' - more likely to 'agree strongly' (15%) than those rating ActewAGL as only 'good'.

- Those in the 'government & infrastructure' industry sector - more likely to 'agree' or 'agree strongly' (81%), than were organisations in the 'sales' or 'grow/build' sectors (59% and 55% respectively).

- Those with smaller annual water and waste-water bills (less than $1,000; 74% 'total agreement') compared with their larger billing counterparts (55% 'total agreement').

- Organisations willing to pay for recycled water on public grounds – only 1% 'disagreed strongly' compared with 12% among those not willing to pay for such a scheme.

Perceptions of ActewAGL being very responsive in the event of a disruption to the sewerage service

Higher ratings of water quality, the sewerage service and ActewAGL were related to higher levels of agreement with the statement that 'ActewAGL is very responsive in the event of a disruption to the sewerage service', viz.,

- Those rating overall water quality as 'excellent' were more likely to 'agree strongly' (31%) than those rating it as 'very good' (14%).

- Those rating the sewerage service as 'very good' or better were more likely to 'agree strongly' (24%) than those rating it only 'good' (11%).

- 'Total agreement' was greater among those rating ActewAGL as 'excellent' (75%) compared with those rating ActewAGL as only 'good' (55%).

'Responsiveness in the event of a sewerage disruption' was also more favourably rated by the 'government & infrastructure' sector (30% 'strong agreement') than it was by the 'grow/build' industry sector (12%).

It was also more favourably rated by those who have 'never' experienced a sewerage overflow (1% 'total disagreement') than those who have (1% 'total disagreement').

You would value Actew-ActewAGL visiting you to discuss your water/sewerage network needs and industry developments

'Strong agreement' with 'valuing Actew-ActewAGL visitation' was higher among those with larger annual water and waste-water bills (over $1,000; 15%) compared with their smaller billing counterparts (6%); those billing in excess of $3,000 per annum had the strongest level of interest (20% 'agreeing strongly' with this statement).

Organisations that had experienced water pressure problems were more likely to 'agree strongly' that they would value a visit (19%) than those who had 'never' experienced

pressure problems (8%).

Perceptions of chlorine in the drinking water

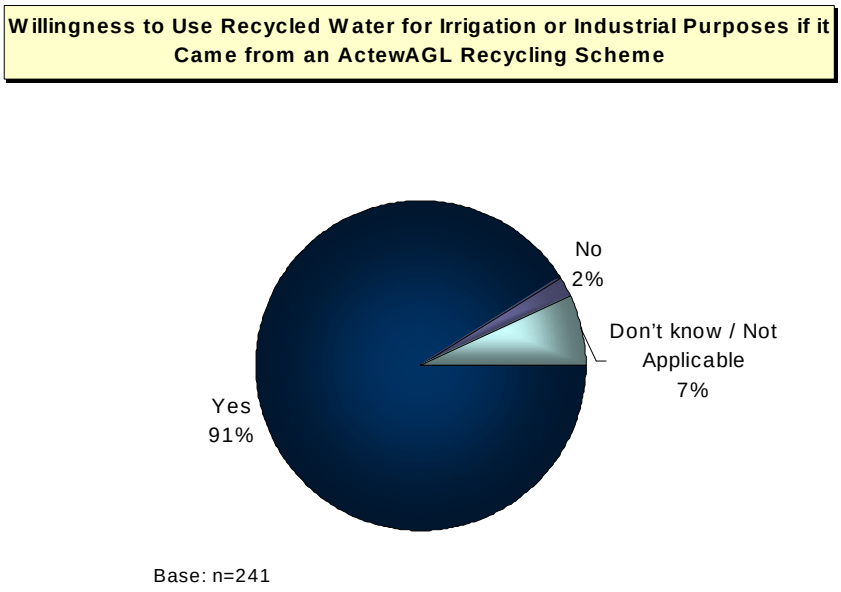
Subgroups most favourable (ie. least likely to agree) in relation to the issue of whether there is too much chlorine in the drinking water, were those most favourably disposed to the overall water quality and to the idea of using recycled water on sports grounds, the 'sales' industry sector and large organisations. Specifically:

- 'Total agreement' with the statement that 'they put far too much chlorine in your drinking water' was lower (ie. more favourable) among organisations that rated the overall water quality as 'excellent' (7%) than those rating the water quality as only 'good' (25%).

- Organisations 'willing to pay for recycled water on public grounds' were less likely to 'agree' or to 'agree strongly' with the statement (ie. were more favourable; 18%) than were those 'not' willing to support this scheme (31%).

- Organisations in the 'sales' sector were more likely to 'disagree' or to 'disagree strongly' (ie. were more favourable; 72%) with this statement than those in the 'grow / build' sector (47%).

- 'Strong disagreement' was greater among larger organisations (those with 10 or more employees; 20%) than it was among their smaller counterparts (5%).

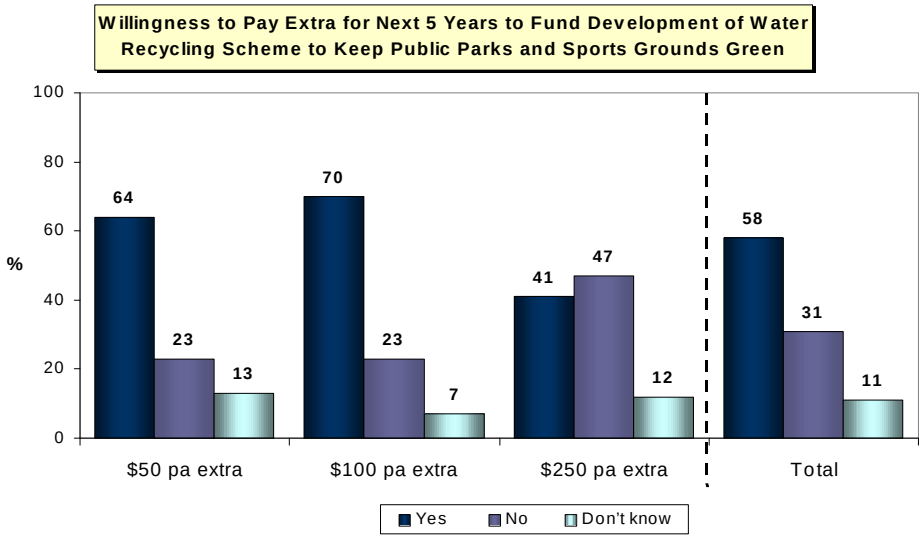


A10. Would you be willing to use recycled water for irrigation or other industrial purposes if it came from an ACTEW recycling scheme? (SINGLE RESP)

Almost all organisations interviewed (91%) said they would be 'willing to use recycled water for irrigation or other industrial purposes if it came from an ACTEW recycling scheme'

The 'grow/build' and the 'government & infrastructure' industry sectors were significantly more likely to be 'willing to use recycled water for irrigation or other industrial purposes' (99% and 96% respectively) compared with the 'sales' sector (80%). There were no other subgroup differences in results evident.

For those respondents favourably disposed toward the use of recycled water for irrigation or other industrial purposes, one specific water recycling concept was put forward at a range of different prices to ascertain the level of willingness to pay for it. The results are discussed overleaf.



Base: Recycled water on public parks and grounds $50 n=76; $100 n=79; $250 n=86; Total n= 241

A11. Now I'd like your opinion on the use of recycled water on only PUBLIC parks and sports grounds. This would ensure that Canberra's public parks and sports grounds would be lush and green for public use even during drought times. Would you be willing to pay $... per year extra on your water bill, for the next 5 years, to fund the development of a water recycling scheme for use on PUBLIC parks and sports grounds to keep them green?

The concept put to organisations was:

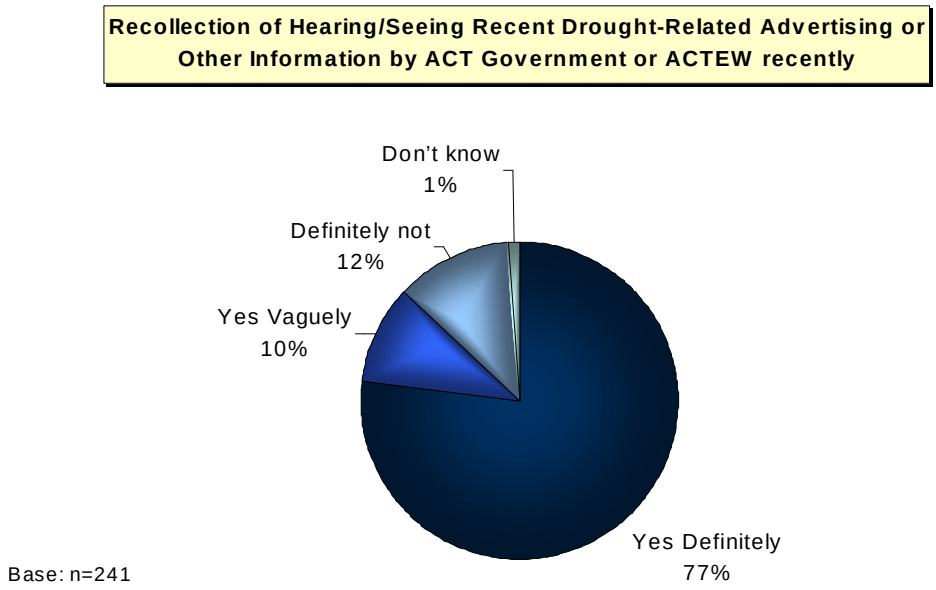
> ***… I'd like your opinion on the use of recycled water on only PUBLIC parks and sport grounds. This would ensure that Canberra's public parks and sports grounds would be lush and green for public use even during drought times. Would you be willing to pay $<AMOUNT> per year extra on your water bill, for the next 5 years, to fund the development of a water recycling scheme for use on PUBLIC parks and sports grounds to keep them green?***

One third of respondents were each exposed to only one of the following three prices: $50, $100, $250.

There were reasonably high levels of willingness to support a scheme for using recycled water on PUBLIC parks and sports grounds at the lower price levels. Sixty to seventy percent of organisations acknowledged a willingness to pay $50 or $100 per annum for 5 years to fund this scheme, dropping back to under half (41%) when the fee was $250 per annum.

Overall, across the three price points, an average of 58% of respondents claimed to be willing to pay extra to support the set up of this scheme.

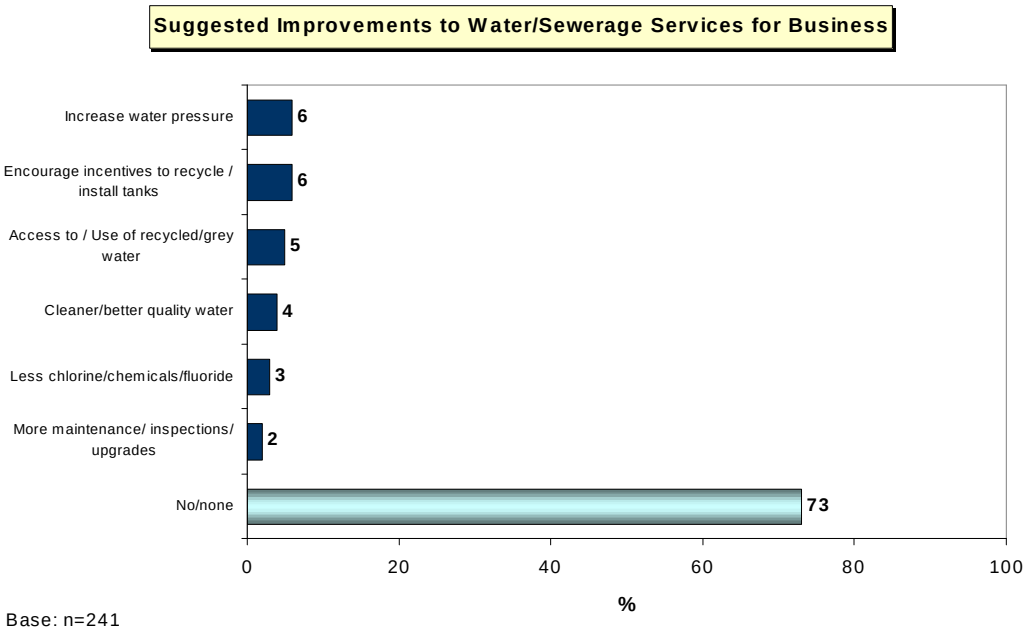
It notable that the level of 'don't know' response was low in relation to views on this scheme; almost all were either willing to support it or not.



A12. Do you recall hearing or seeing any drought-related advertising or other information by the ACT Government or ACTEW recently? Would you say….(SINGLE RESPONSE)

Over three quarters (77%) of respondents claimed to 'definitely recall hearing or seeing … drought-related advertising or other information by the ACT Government for ACTEW recently'. An additional 10% claimed to have 'vague' recollection. Only 12% noted no recollection of this advertising whatsoever.

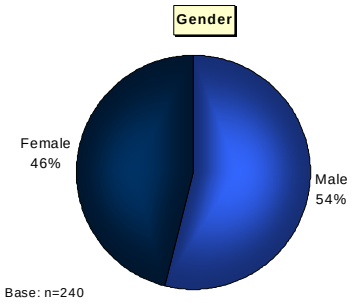
No subgroup differences in these results were evident.

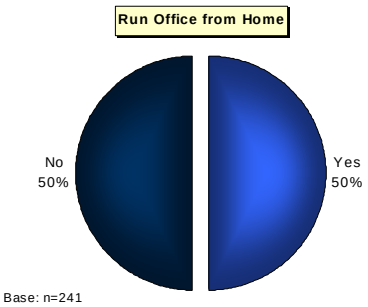


A13. Are there any improvements that you would like to see made to the water supply or sewerage services for your site? (SINGLE RESPONSE)

Over 70% of organisations were unable to provide any suggestions for improvements to the water supply or sewerage service. Those who did come up with suggestions provided a wide variety these. Those related to 'recycling' were the most commonly raised with 6% noting a need to 'encourage incentives to recycle or install water tanks' and 5% calling for 'access to, or use of, recycled or grey water'. Water quality issues were also raised including 4% calling for 'cleaner, better quality water' and 3% desiring 'less chlorine, chemicals or fluoride' in the water.

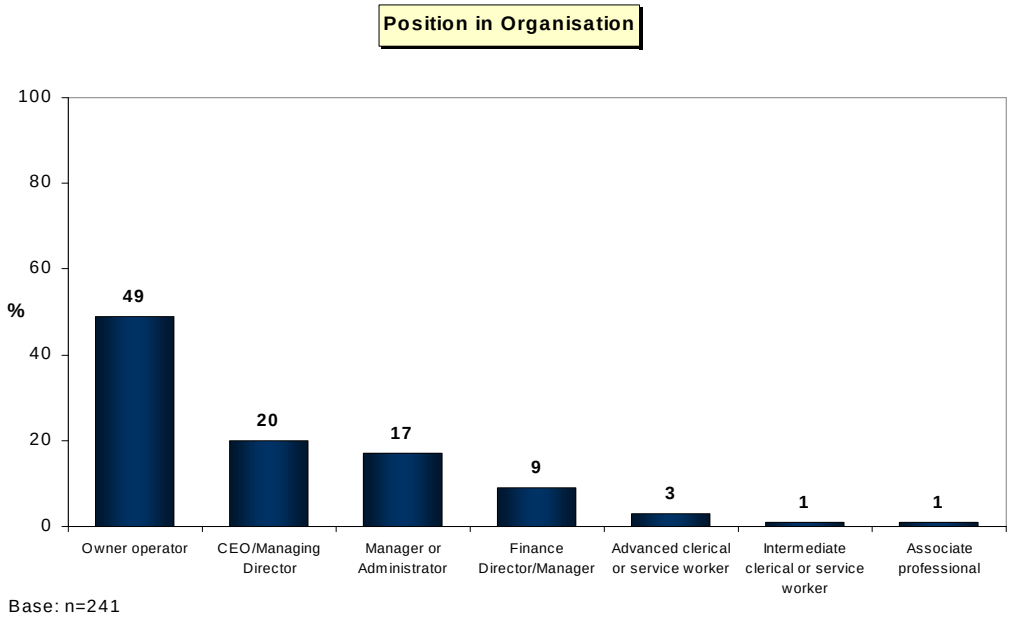
T.2.4. Organisation and Respondent Profile





F3. Do you currently run your office from home? (SINGLE RESPONSE)

The gender spilt was reasonably even for those interviewed, and 50% claimed to be running an office from their home.



F2. What is your position in the organisation? (SINGLE RESPONSE)

Half of those interviewed (49%) were 'owner/operators', with about one in five holding the position of 'CEO or MD' or 'Manager/Administrator'.

APPENDIX U. GAS – RECRUITMENT SURVEY FINDINGS

When interpreting results of the 'recruitment survey', the following criteria has been used in accordance with standard practice in the market research, and the broader social sciences, industry:

1. Results are only presented for instances where the sample size (ie. the 'base' for the question) has a minimum of 30 respondents,[96]

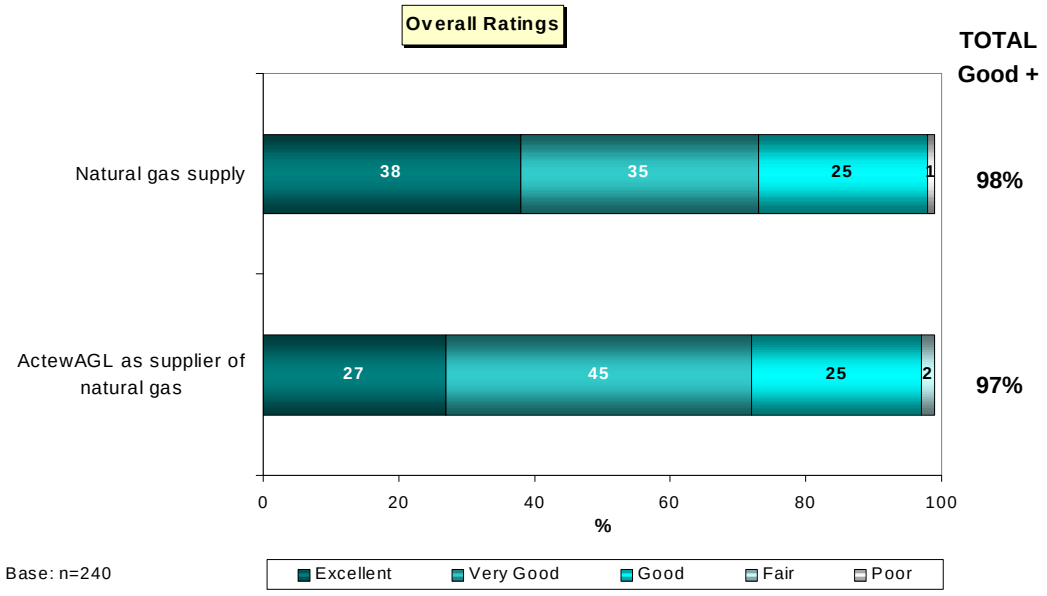
2. The term 'significant' means that results are 'statistically' significantly different as discussed in the text, at the 95% level of confidence.

Further, significant differences between subgroups have only been discussed where they have been identified as being significant; that is, the 'absence' a significant difference has not been systematically noted.

[96] As noted earlier in the report, sample sizes of 30 or more are considered "reasonably large" as the sampling distributions of the sample estimates (such as means or proportions) for populations that are close to the 'normal distribution'. For a discussion of this area refer to Chapters 9 'Procedures for Drawing Probability Samples' (particularly p. 302) and 15 'Data Analysis', in Dillon, Madden & Firtle, "***Marketing Research in a Marketing Environment***" 1990, or any statistics text book.

U.1. Gas Residential

U.1.1. Overall Ratings



O1. Firstly, overall how would you rate the natural gas supply to the home in which you live? Would you say it was...(SINGLE RESPONSE)
O3. And overall how would you rate ActewAGL as the supplier of natural gas to the home in which you live? Would you say... (SINGLE RESPONSE)

Perceptions of the natural gas supply

The overall gas supply was rated very highly with almost all respondents rating it 'good' or better and only 1% giving it a 'poor' rating.

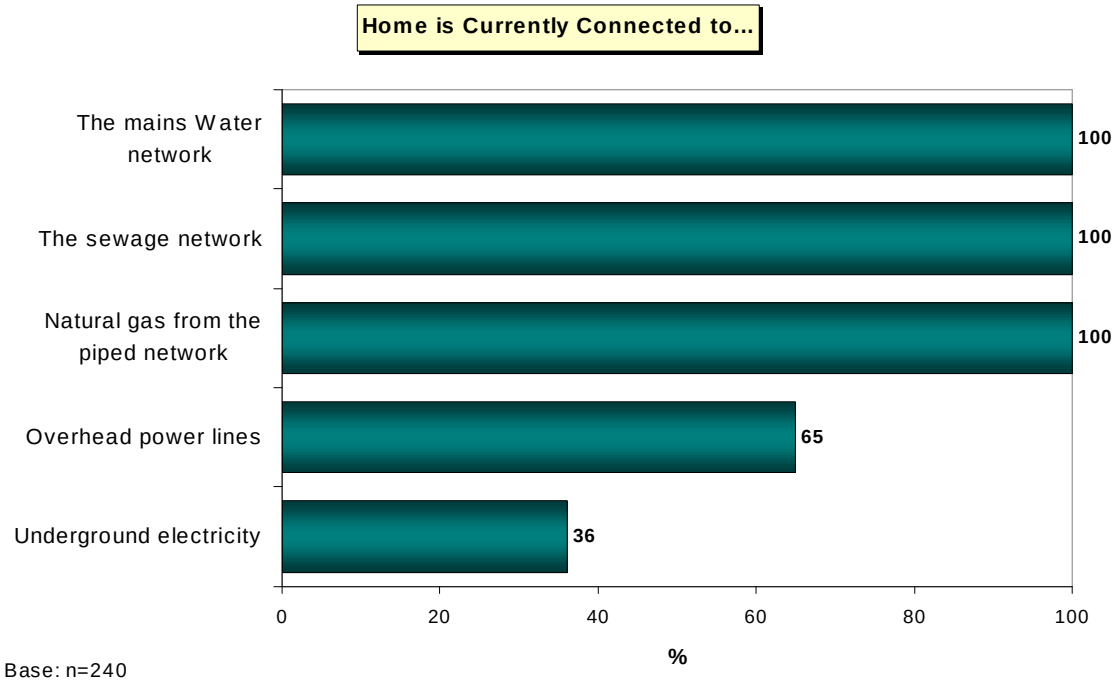
All of those rating the natural gas supply as either 'fair' or 'poor' had household incomes in excess of $100,000. No other significant sub-group differences were apparent.

Perceptions of ActewAGL as a supplier of natural gas

Overall, ActewAGL was also rated very well; again almost all respondents rated the organisation as 'good' or better, with no 'poor' ratings at all.

In terms of other significant sub-group differences, those without children in their household were more likely to rate ActewAGL as 'very good' or better (80%, versus 66% among those with children). Further, those rating ActewAGL as 'very good' or better were also more likely to rate their gas supply as 'very good' or better (88% versus 39% of those who rated ActewAGL as 'good'); that is, there was a positive relationship between ratings of ActewAGL and their natural gas supply.

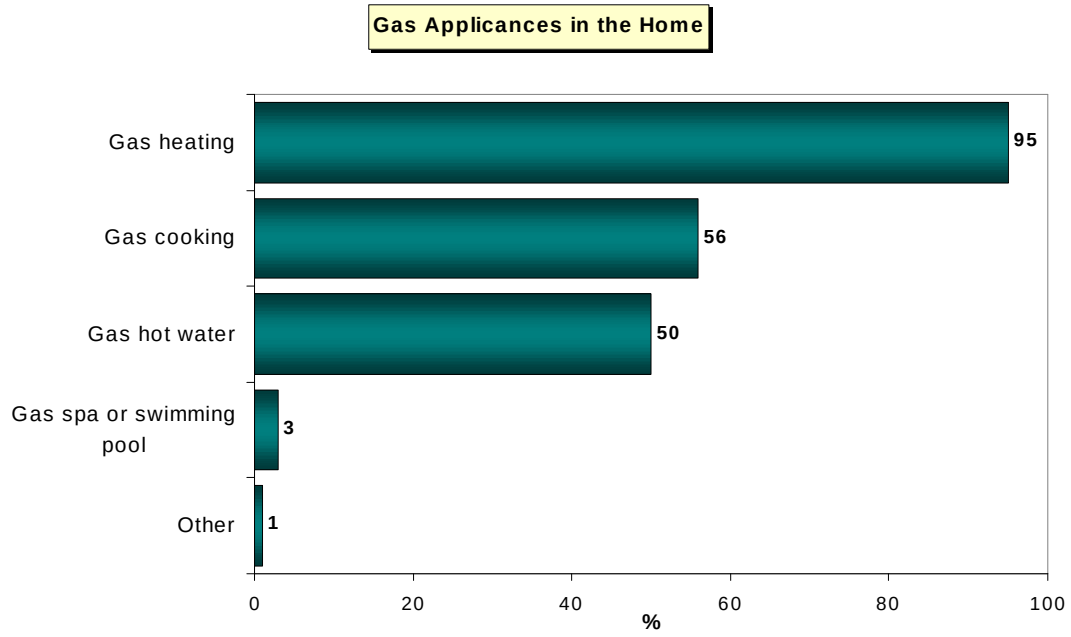
U.1.2. Behaviour



Base: n=240

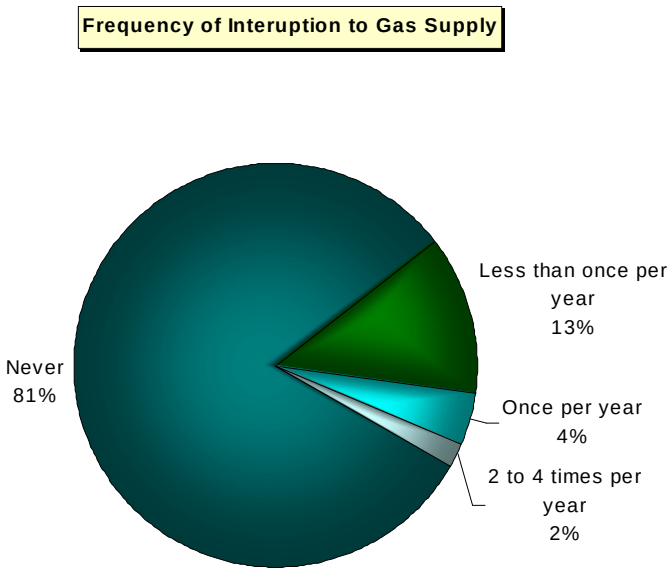
R2. Is your home currently connected to…..(MULTIPLE RESPONSE)

Of those homes connected to the natural gas supply, all were also found to be connected to the mains water network and the sewerage network. Further nearly two thirds were found to be connected to overhead powerlines, with the remaining one third connected to underground power.



B1. Do you have any of the following appliances in your home running on natural gas? Please ignore you goas bottled equipment such as the BBQ...(MULTIPLE RESPONSE)

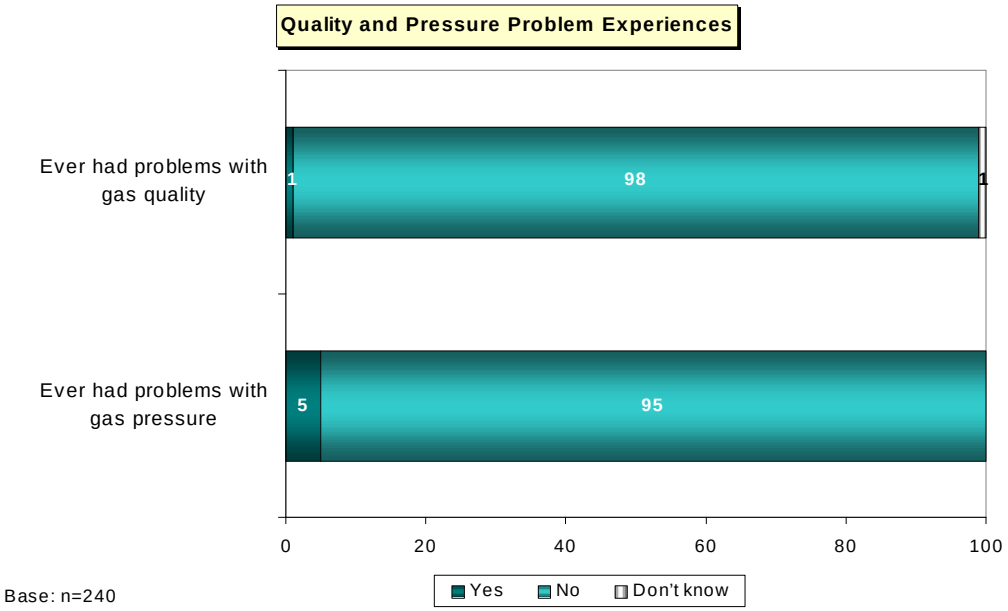
The dominant use to which gas was placed in the home was heating (95%). However around half also had gas cooking (56%) and/or gas hot water (50%). Other uses of gas in the home were rare.



Base: n=240

B2. About how often would you say the natural gas has completely gone off to your home? Would you say…..(SINGLE RESPONSE)

Disruptions to the gas supply was perceived to be a very rare event – 81% of households do not recall 'ever' having the natural gas to their home go off completely. However, 13% said they had had it go off 'less than once' per year. Only 6% claim that it goes out once per year or more often on average.



Base: n=240

B3. Have you ever had any problems with the pressure of the natural gas coming into your home? (SINGLE RESPONSE)

B4. And have you ever had any problems with the quality of the natural gas coming into your home? [IF REQUIRED EXPLAIN 'QUALITY': gas quality refers to things like the quality of the heat given off] (SINGLE RESPONSE)

Along with the reported rarity of having the gas supply go out, other types problems were also perceived to be rare; only 1% of households recall 'ever experiencing problems with gas quality', and only 5% recall ever having 'gas pressure' issues.

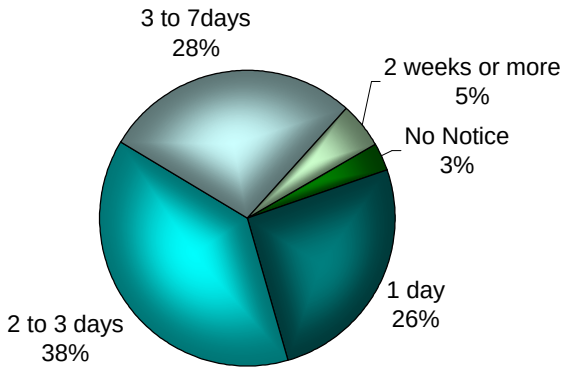
U.1.3. Attitudes

Calling ActewAGL to report a problem or disruption to the gas supply

Only 8% of those interviewed had tried to call ActewAGL to report any problems or disruptions to their natural gas supply in the past year. About 3% of all those interviewed had made calls 'related to the recent bushfires'.

Those who rated ActewAGL as 'very good' or better were more likely to say 'no' they had not called ActewAGL (95% said 'no' versus 86% of those who rated ActewAGL as only 'good').

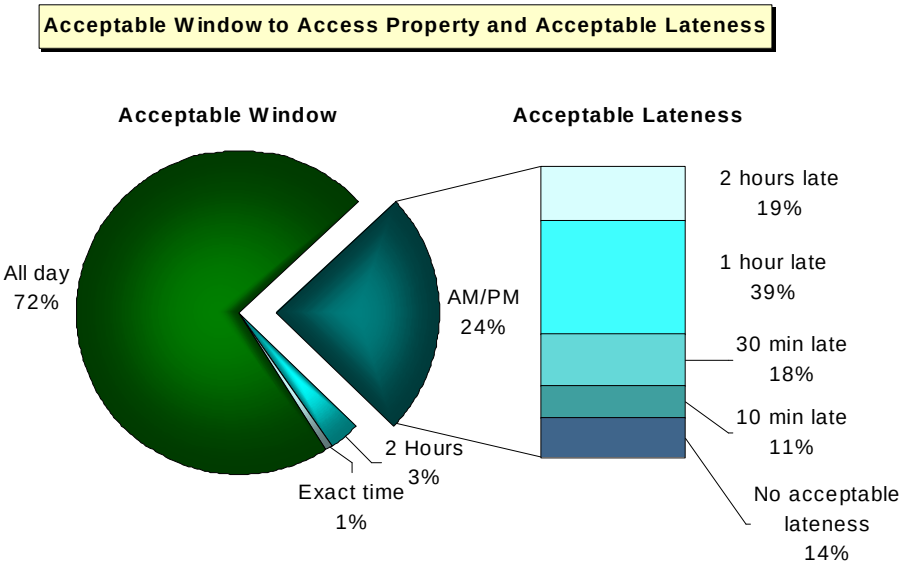
Acceptable Notice for Cut-off to Undertaken Planned Maintenance Work



Base: n=240

A5. If ActewAGL needed to cut off the natural gas to your home in order to do some planned maintenance work, how much notice, if any, would you find acceptable? Would you say…..(SINGLE RESPONSE)

Almost all households interviewed, 95% felt that one week or less was 'acceptable' as the notice period for cutting off the gas supply to their home in order to undertake planned maintenance work; over one quarter (28%) considered '3 to 7 days' as 'acceptable', whilst a similar proportion felt than only one day was 'acceptable', with nearly 4 in 10 (38%) asking for only '2 to 3' days notice.



Base: Acceptable window n=240; Acceptable lateness for am/pm window n=57

A6. If ActewAGL needed access to your property to carry out some planned maintenance work, would…be acceptable to you? (SINGLE RESPONSE)

A7. And how much <u>after</u> that window would you find their arrival to still be acceptable to you? (SINGLE RESPONSE)

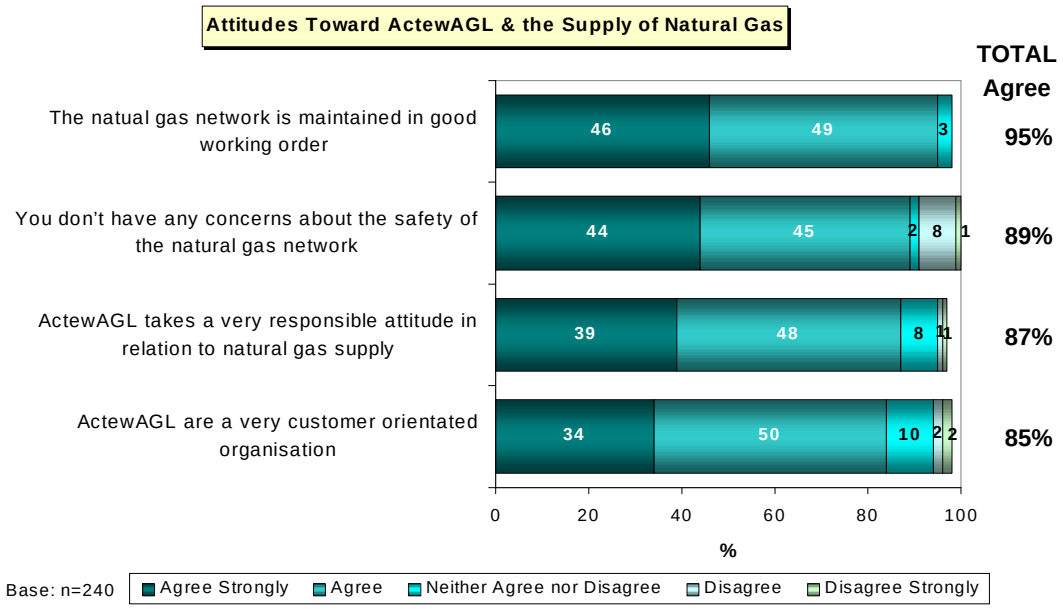
'All day' was considered an 'acceptable' window to access property (to carry out planned maintenance work) by most households (72%). However almost all the remainder (24%) considered a 'morning / afternoon' window to be 'acceptable'.

Of those who considered a window smaller than an entire day to be 'acceptable' notification for property access, were also asked about the extent of 'lateness' they would accept in meeting that window. Of those stipulating a 'morning / afternoon' window[97] (57 respondents), almost all (86%) considered some amount of lateness to be 'acceptable', although the extent of lateness varied considerably:

- 1 in 5 considered '2 hours' late as 'acceptable',
- 4 in 10 accepted 'one hour',
- another 1 in 5 found '30 minutes' 'acceptable', while
- 1 in 10 accepted only '10 minutes'.

[97] Sample sizes were too small to analyse 'acceptable lateness' windows among those choosing appointment windows other than 'morning / afternoon'.

Respondents rated their level of agreement with seven aspects of ActewAGL's service. The four aspects with the most favourable results are shown and discussed below, with results for the remaining three aspects discussed subsequently.



A8. I am now going to read out some statements about household natural gas supply, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that…..[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree? (SINGLE RESPONSE)

Consistent with the very favourable ratings of ActewAGL and their supply of natural gas, most respondents also had very positive attitudes towards specific aspects of ActewAGL's services, particularly with these first four aspects all of which had 'total agreement' levels of at least 85%:

- 'the natural gas network being maintained in good working order', and a zero level of disagreement
- 'not having concerns about the safety of the natural gas network', although 9% disagreed
- 'ActewAGL taking a very responsible attitude in relation to natural gas supply', and
- 'ActewAGL being a very customer orientated organisation'.

In fact, there was a strong positive relationship between attitudes on the range of specific service aspects and <u>overall</u> ratings of both ActewAGL and the overall gas supply. This is discussed overleaf where the significant differences in results between sub-groups are presented.

Perceptions of the natural gas network being maintained in good working order

Perceptions of the gas network being maintained in good working order were more favourable among those holding more favourable views of ActewAGL and the overall gas supply, as well as those with larger gas bills. Specifically:

- Those who rated their overall gas supply as 'very good' or better were more likely to 'agree strongly' that the 'gas network is maintained in good working order' (54%, versus 25% for those rating the gas supply as only 'good').

- Those who rated ActewAGL overall as 'very good' or better were more likely to 'agree strongly' (91%, versus 22% for those rating ActewAGL as only 'good').

- Those with a larger bill size (over $500 per annum) were more likely to 'agree strongly' with this statement (55%, versus only 34% among those with smaller gas bills).

No concerns about the safety of the natural gas network

Concerns about the safety of the gas network were less likely among those holding more favourable views of ActewAGL and the overall gas supply. Specifically:

- Those who rated their gas supply as 'excellent' were more likely to 'agree strongly' that they had 'no safety concerns about the gas network' (58% versus less than 40% among those rating their gas supply as either 'good' or 'very good').

- Those who rated ActewAGL as 'very good' or better were more likely to 'agree strongly' (49%versus 32% among those rating ActewAGL as 'good').

Perceptions of ActewAGL taking very responsible attitude in relation to natural gas supply

Perceptions of ActewAGL taking a responsible attitude to gas supply were more likely to be favourable where more favourable views are held in relation to ActewAGL and the gas supply overall:

- Those who rated their gas supply as 'excellent' were more likely to 'agree strongly' that 'ActewAGL takes a very responsible attitude in relation to the natural gas supply' (47%, versus 31% among those who only rated the gas supply as 'good').

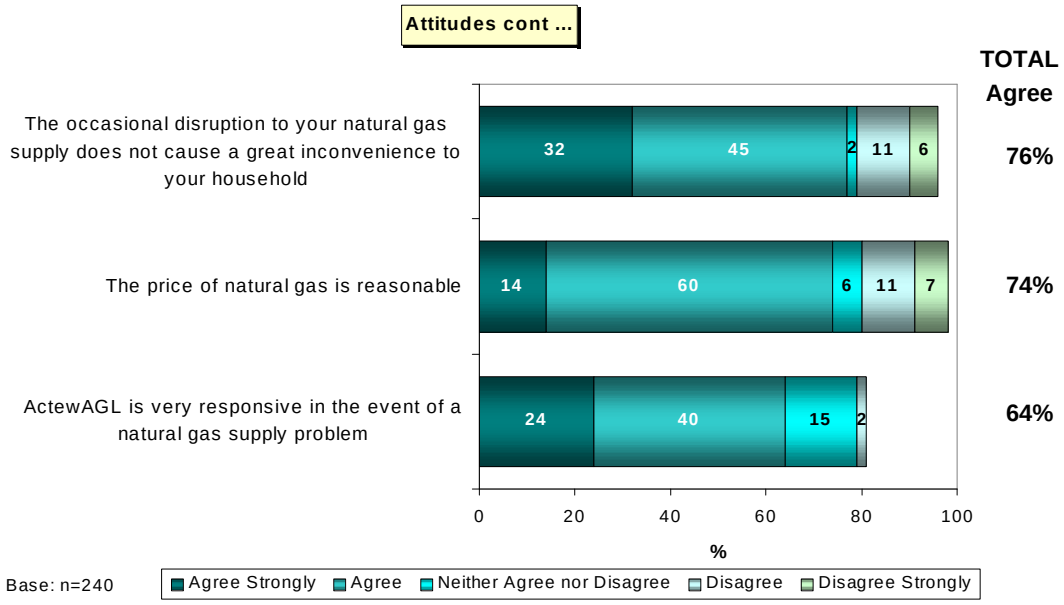
- Those who rated ActewAGL as 'very good' or better had a higher level of 'total agreement' with this statement (91%, versus only 78% for those rating ActewAGL as 'good').

Perceptions of ActewAGL as a very customer orientated organisation

Consistent with results for other statements, perceptions of ActewAGL's 'customer orientation' were more favourable among those who held particularly favourable views of the gas supply and ActewAGL overall:

- Those who rated their gas supply as 'very good' or better were more likely to 'agree strongly' that 'ActewAGL are a very customer oriented organisation' (38%, versus 22% among those rating their gas supply as only 'good').

- Those who rated ActewAGL as 'very good' or better had a significantly higher level of 'total agreement' with this statement (91%, versus 71% for those rating ActewAGL as only 'good').



A8. I am now going to read out some statements about household natural gas supply, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that…..[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree? (SINGLE RESPONSE)

Attitudes were also reasonably favourable (64% to 76% 'total agreement') for the final three statements:

- 'occasional disruptions to the natural gas supply not causing a great inconvenience to their household', although the level of 'total disagreement' was 17%,
- 'the price of natural gas being reasonable', although again the 18% level of 'total disagreement' is notable, and
- 'ActewAGL being very responsive in the event of a natural gas supply problem'.

  However this latter statement should be interpreted within the context of the 20% of respondents who either said that they felt this service aspect was 'not applicable' to them or that they 'did not know' how to rate ActewAGL on this aspect – arguably this is reflecting the rarity of householders ever experiencing gas supply problems.

A number of significant differences in results between subgroups were found across these three service aspects:

<u>Occasional disruptions to the natural gas supply does not cause a great inconvenience</u>

Similar to results for other statements, those most likely to respond favourably were those with particularly favourable views of the gas supply and ActewAGL overall:

- Those who rated their gas supply as 'very good' or better were more likely to 'agree

strongly' that occasional disruptions do not cause a great inconvenience (36%, versus only 19% among those rating their gas supply as only 'good').

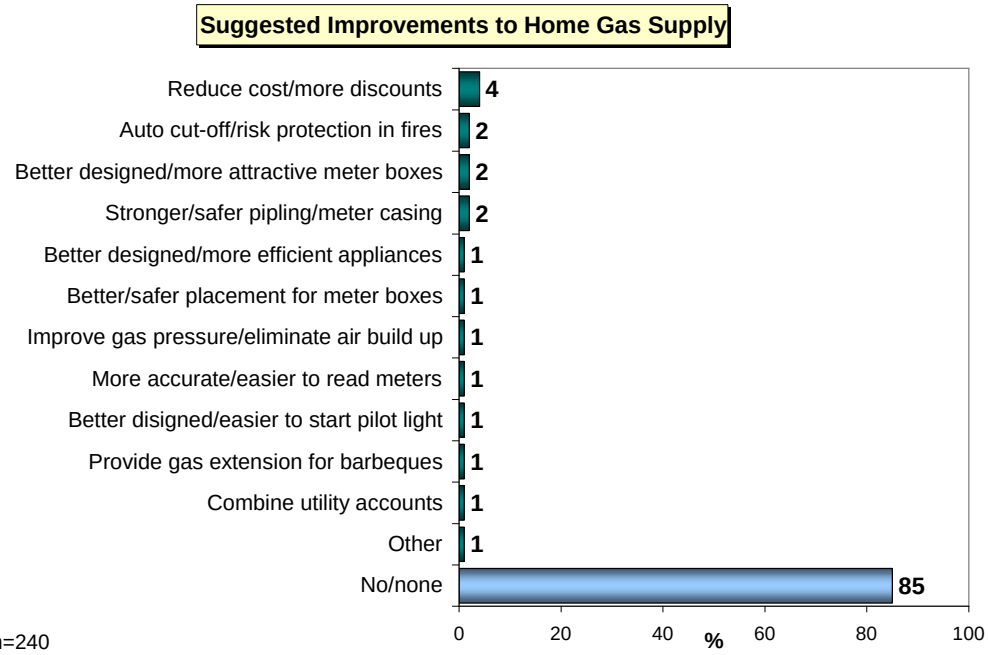
- Those who rated ActewAGL as 'very good' or better were also more likely to 'agree strongly' (38%, versus only 15% among those rating ActewAGL as only 'good').

Perceptions of the price of natural gas being reasonable

Once again those most likely to respond favourably were those who rated their gas supply and ActewAGL particularly favourably:

- Those who rated their gas supply as 'excellent' were significantly more likely to 'agree strongly' that the 'price of natural gas is reasonable' (22%, versus only 7% among those rating their gas supply as only 'good').

- Those who rated ActewAGL as 'very good' or better had a significantly higher level of 'total agreement' with this statement (79%, versus 64% among those rating ActewAGL as only 'good').



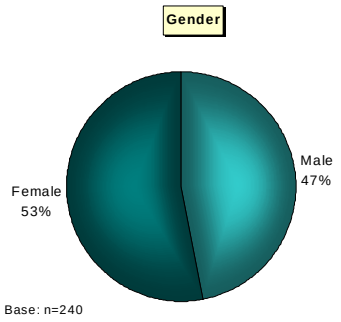
Base: n=240

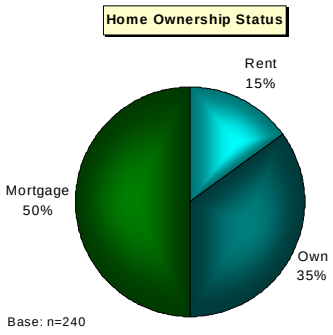
A9. Are there any improvements that you would like to see made to the natural gas supply to your home? (MULTIPLE RESPONSE)

'No' improvements to the gas supply was considered necessary by the majority of respondents (85%).

Suggestions that were made varied widely, and had little commonality across respondents. 'Reducing prices' was suggested by 4% of households, and safety related suggestions were made by a similar proportion of respondents: 'automatic cut-off / risk protection in fires' (2%), 'stronger / safer piping / meter casing' (1%), 'better / safer placement for meter boxes' (1%).

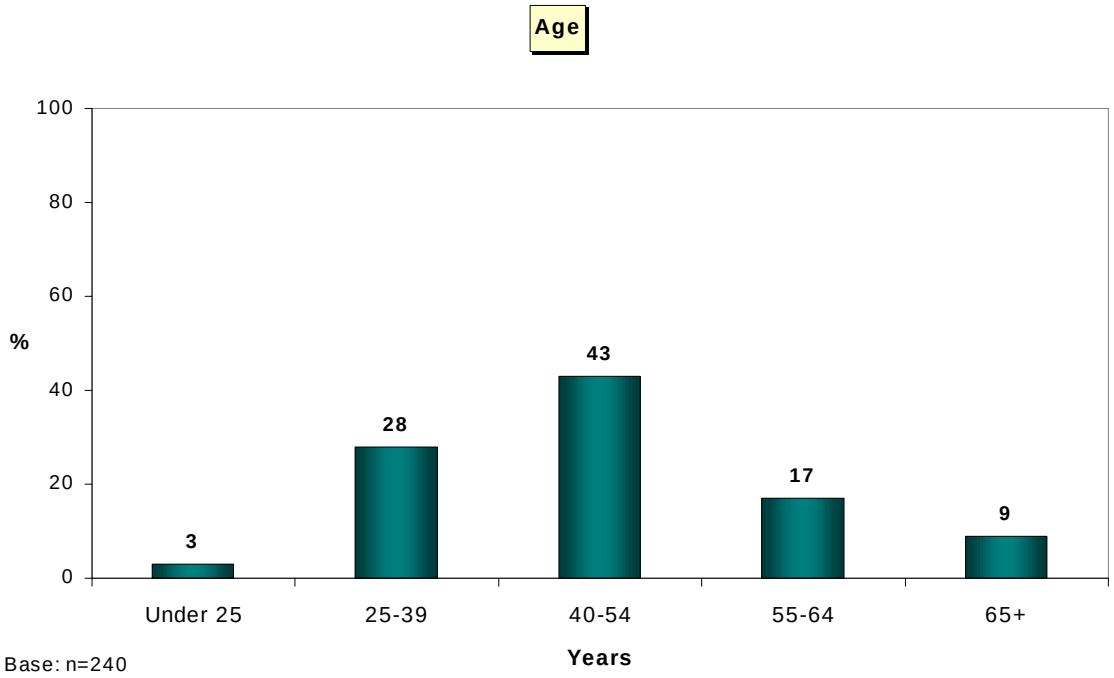
U.1.4. Respondent Profile





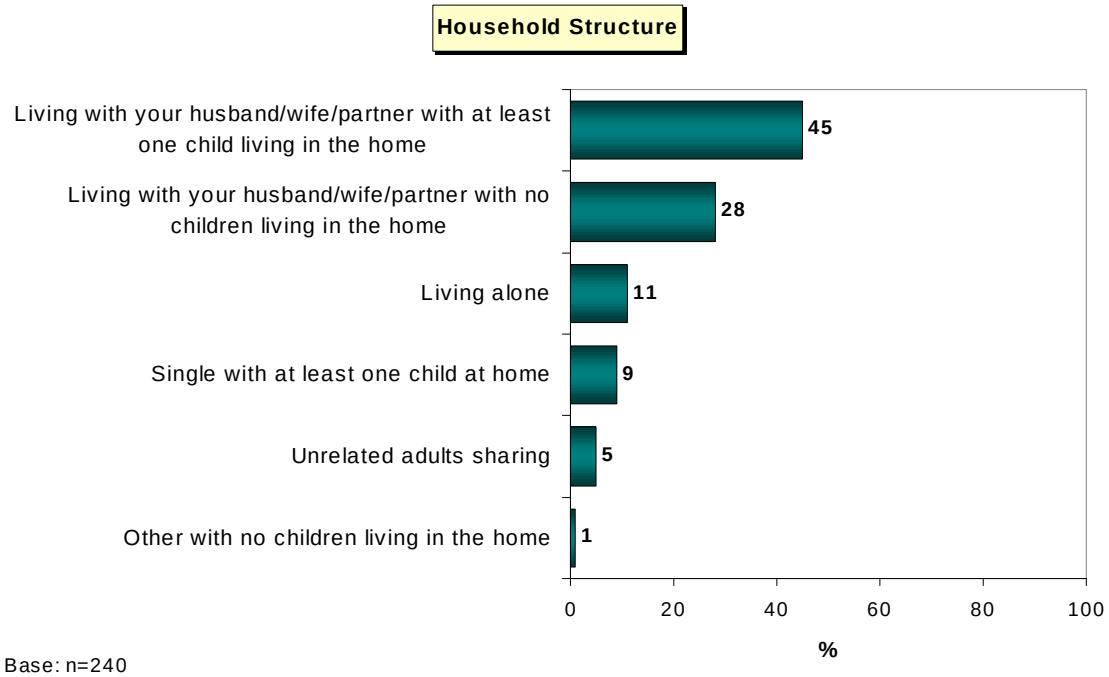
D3. Do you currently Rent, Own, or have a Mortgage on the home in which you live? (SINGLE RESPONSE)

Respondents were almost evenly divided between males and females. Half had a mortgage with another 35% owning their own home. Only 15% were in 'rented' accommodation.



D2. First can you tell me into which of the following age groups you belong? (SINGLE RESPONSE)

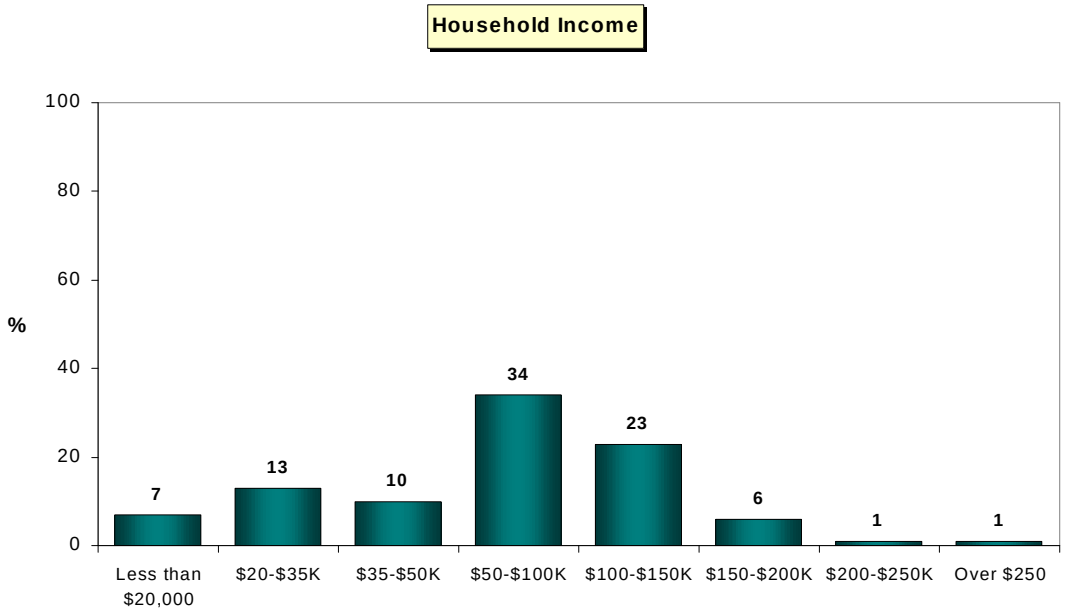
About 7 in 10 respondents were aged between 25 and 54; about one quarter were aged 55 or over.



Base: n=240

D4. And which of these best describes your household? (SINGLE RESPONSE)

Over 80% of respondents shared their home with an adult partner, most of these also having at least one child living in the home, whilst 11% lived alone.

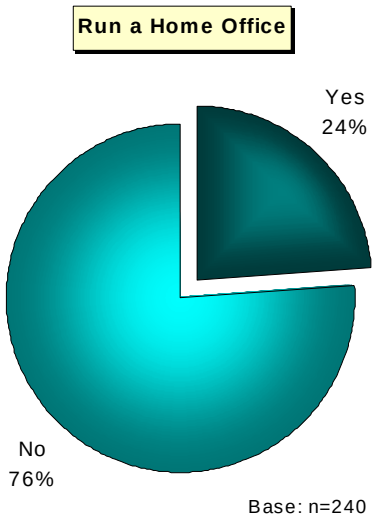


Base: n=240

D5. [Single adult households] Would your personal income from all sources before tax be under $100,000 or over $100,000? Would that be... (SINGLE RESPONSE)

D5. [Partnered adult households] Would the combined income of yourself and your wife/husband/partner, from all sources before tax be under $100,000 or over $100,000? Would that be... (SINGLE RESPONSE)

The majority of households had incomes in excess of $50,000 per annum, with nearly one third having household incomes in excess of $100,000.



D6. Do you or your wife/husband/partner currently run a home office from your home? (SINGLE RESPONSE)

One quarter had a member of the household running a home office from the home.

U.2. Gas Commercial

In order to assist with analysis and interpretation of differences between industry subgroups, industries were grouped into five industry sectors to provide subgroups of sufficient sample size. These included the following:

- Services – comprising Australian Bureau of Statistics (ABS) segments including 'property and business services', 'finance & insurance', 'personal & other services'
- Sales – comprising ABS segments including 'retail trade' and 'wholesale trade'
- Grow / Build - comprising ABS segments including 'construction', 'manufacturing', and 'agriculture, forestry, fishing & mining'
- Government & Infrastructure - comprising ABS segments including 'transport & storage', 'communication services', 'government administration', 'education' and 'health & community'
- Hospitality - comprising ABS segments including 'accommodation & restaurants' and 'cultural and recreational'

As the commercial gas sample was chosen randomly from the population of ACT and Queanbeyan organisations with gas connected [98], the difference between this sample and the population of 'all' ACT and Queanbeyan organisations[99], is of interest. A comparison between these two populations is provided below:

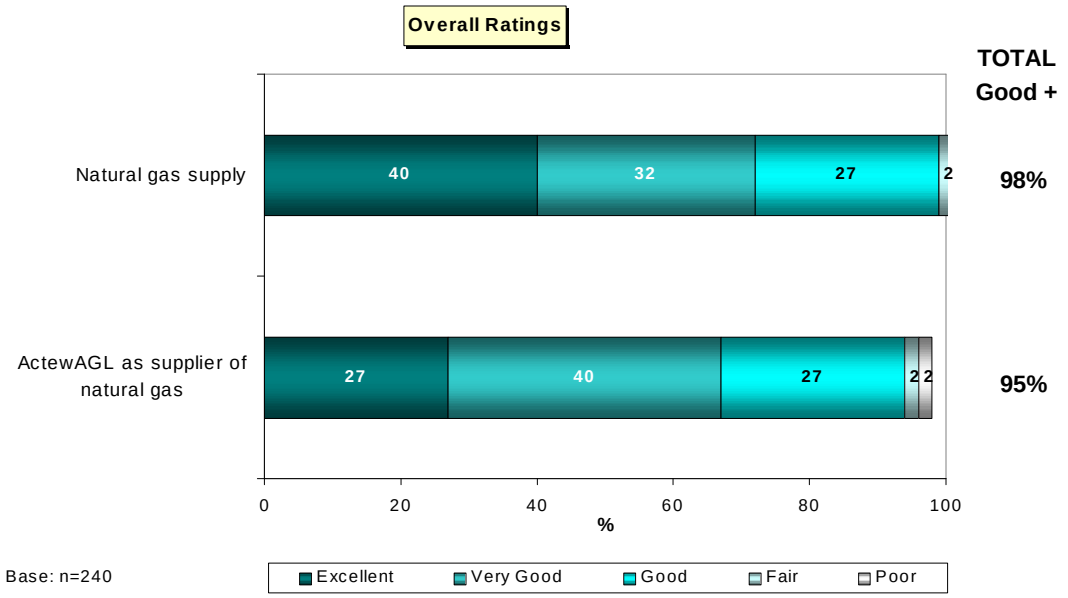
INDUSTRY	Proportion of ALL organisations	Proportion with gas connected
Property & business services	24%	17%
Retail trade	17%	6%
Construction	11%	14%
Health & community services	8%	7%
Personal & other services	7%	6%
Accommodation, cafes & restaurants	5%	10%
Wholesale trade	5%	1%
Finance & insurance	4%	0%
Cultural & recreation services	3%	5%
Transport & storage	3%	1%
Education	3%	10%
Manufacturing	4%	16%
Government, administration & defence	2%	3%
Agriculture, forestry, fishing & mining	3%	3%
Communication services	1%	0%

It can be seen from the table above that organisations with gas connected in the ACT and Queanbeyan region, are particularly under-represented in the 'property and business services' and 'retail' industries, but particularly over-represented in the 'accommodation, café and restaurants', 'education' and 'manufacturing' industries.

[98] As identified through random calling and employing appropriate 'filter' questions via this survey.

[99] As identified by the Australian Bureau of Statistics, Catalogue No. 1362.8, 2000; Commonwealth of Australia 2000.

U.2.1. Overall Ratings



O1. Firstly, overall how would you rate the natural gas supply to your site? Would you say it was….(SINGLE RESPONSE)
O3. And overall how would you rate ActewAGL as the supplier of natural gas to your site? Would you say … (SINGLE RESPONSE)

Perceptions of the natural gas supply

The natural gas supply was rated very favourably by organisations, with almost all rating it 'good' or better and none giving it a rating of 'poor'; the 40% that rated it as 'excellent' is particularly favourable.

A strong positive relationship was evident between ratings of ActewAGL and the overall gas supply; for example, organisations ratings ActewAGL as 'very good' or better were significantly more likely to rate the natural gas supply as 'very good' or better (90%, versus only 34% among those rating ActewAGL as only 'good').

There were no other significant subgroup differences.

Perceptions of ActewAGL as a supplier of natural gas

Overall, ActewAGL was also rated very well by organisations; again almost all rated the organisation as 'good' or better with only 2% rating it as 'poor'.

A number of subgroups were significantly more favourable toward ActewAGL than their counterparts. These included those not experiencing supply interruptions, the 'services' industry sector, smaller billing organisations, and those operating from dedicated business premises. Specifically:

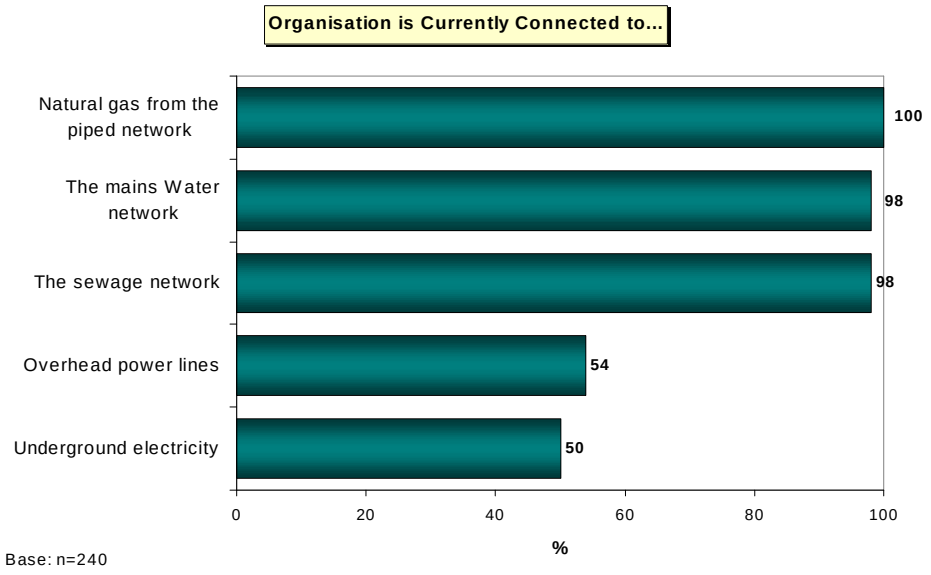
- 71% of those who had 'never' experienced a gas supply interruption rated ActewAGL as 'very good' or better compared with only 54% of those 'had' experienced such an interruption.

- The 'services' industry sector was significantly more likely to rate ActewAGL as 'very good' or better (77%) than was the 'grow / build' sector (59%).

- Those with a gas bill of 'less than $2,000 per annum' were significantly more likely to rate ActewAGL as 'excellent' (34%, versus only about 13% for those with larger gas bills).

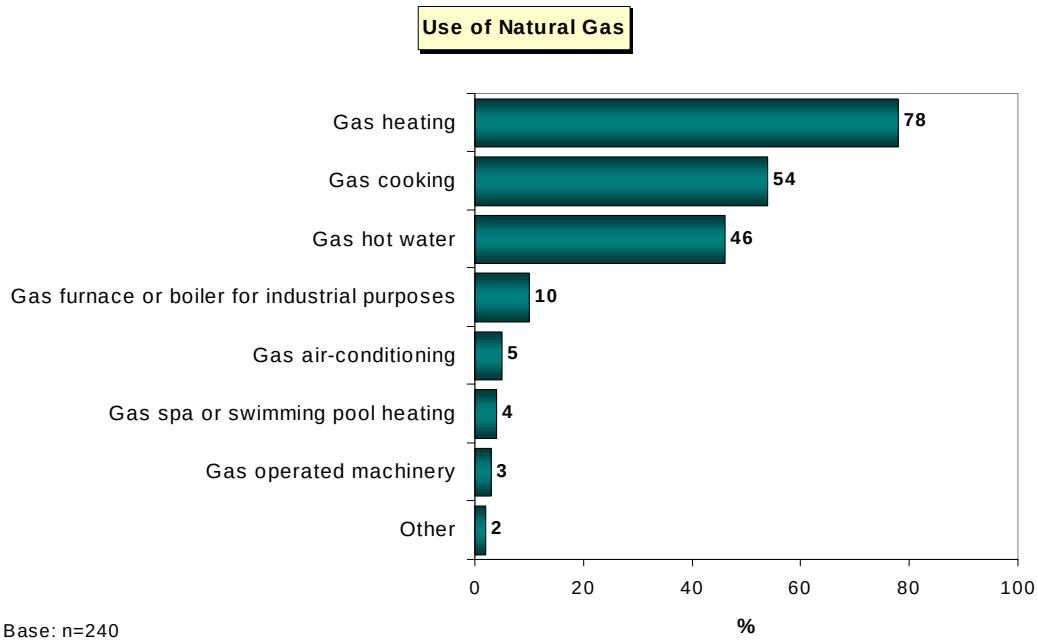
- Those operating a dedicated business office were significantly more likely to rate the organisation as 'very good' or better (49%) compared with those operating from home (35%).

U.2.2. Behaviour



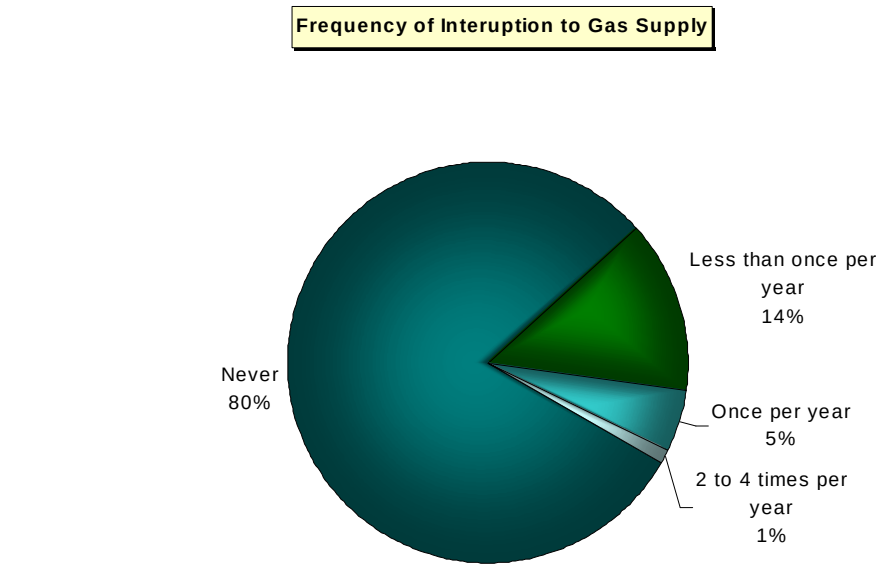
R1. Is your organisation either at this site, or any other site you may have in the ACT or Queanbeyan, currently connected to…..(MULTIPLE RESPONSE)

Almost all organisations connected to the natural gas network were also found to be connected to the mains water network and the sewerage network. About half had sites connected to either underground or overhead powerlines.



B1. Is natural gas used for any of the following purposes at your site? Please ignore bottled gas. (MULTIPLE RESPONSE)

Natural gas tended to be used for gas heating by most organisations (78%) with around half also using it for gas cooking (54%) and gas hot water (46%). Other usages were much less prevalent; 'gas fired furnaces or boilers for industrial purposes' was the only other area in which gas was used by at least 10%of organisations.



Base: n=240

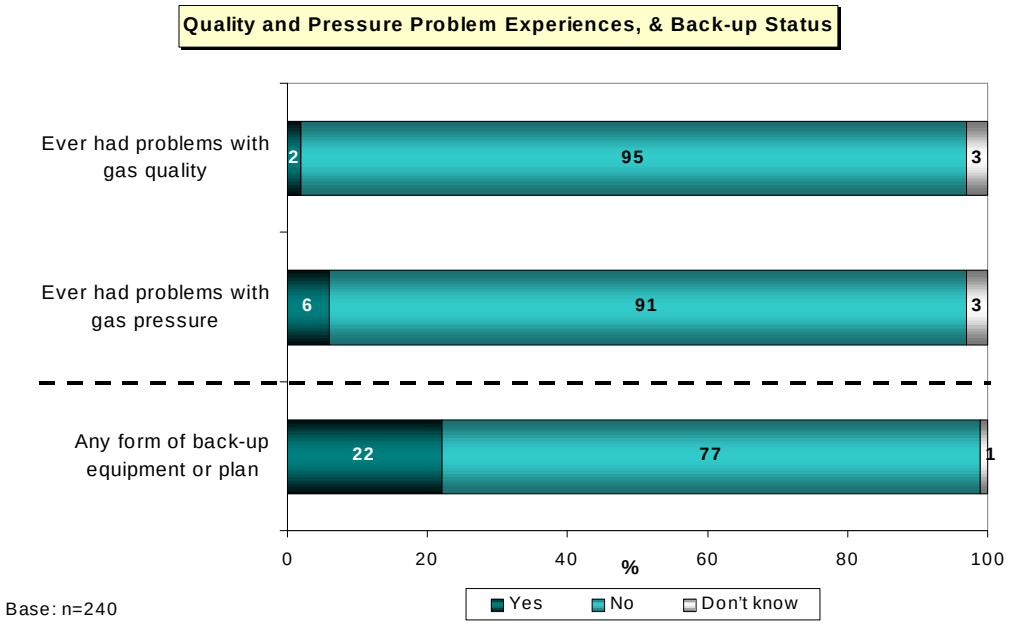
B2. About how often would you say the natural gas has completely gone off at your site? Would you say…..(SINGLE RESPONSE)

Similar to experiences among householders, organisations claimed to have rarely experienced interruptions to their gas supply; 80%in fact do not recall 'ever' experiencing a gas supply interruption, with an additional 14% claiming to have experienced such an interruption 'less than once per year' on average.

The following significant subgroup differences were identified:

- The 'hospitality' industry was more likely to claim to have 'never' experienced a gas supply interruption (94%) than was the 'services' industry sector (70%).

- Those rating their gas supply as 'excellent' overall were more likely to say they had 'never' experienced an interruption (85%) versus those rating their gas supply as only 'good' (72%). A similar pattern was evident among those rating ActewAGL as 'excellent' versus only 'good', with the former more likely to say they had 'never' experienced an interruption (88% versus 74%).



B3. Do you have any form of back-up equipment or back-up plan already in place in case the natural gas supply was completely turned off at your site? (SINGLE RESPONSE)

B7. Have you ever had problems with the pressure of the natural gas coming into your site? (SINGLE RESPONSE)

B8. And have you ever had any problems with the quality of the natural gas coming into your site? [IF REQUIRED EXLAIN 'QUALITY': gas quality refers to things like the quality of the heat given off] (SINGLE RESPONSE)

Perceptions of gas pressure and quality problems:

Along with the perceived rarity of experiencing an interruption, almost no organisation recalled having experienced problems with 'gas quality' (2%), and only 6% claimed to have experienced problems with 'gas pressure'.

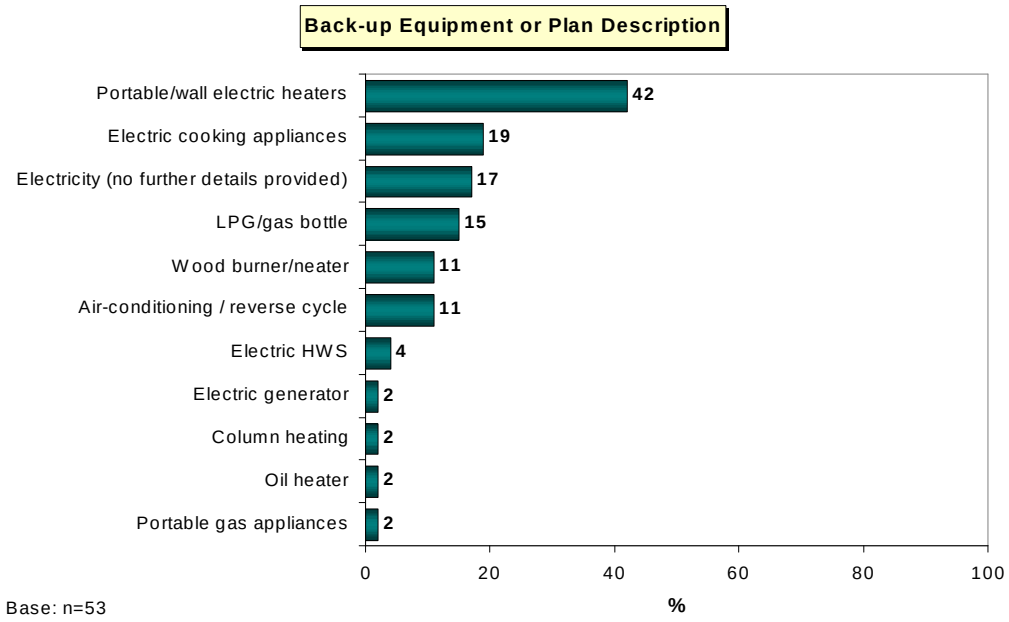
Those who rated their gas supply as 'very good' or better were more likely to say 'no' they had not experienced problems with gas pressure (95%, versus 84% of those rating their gas supply as 'only good'). Further, none of those with very large gas bills (in excess of $7,500 per annum) claimed to have ever experienced a gas pressure or quality problem, which contrasted with medium spenders (between $2,000 and $7,500 per annum) of whom 84% said they had 'never' experienced a 'gas pressure' problem and 89% said they had 'never' had a 'gas quality' problem.

Back-up equipment or plans:

About one in five (22%) claimed to have some form of back-up equipment or plan in place in case the natural gas supply was completely turned off at their site. Back-ups were significantly more likely to be in place in the 'services' and 'grow/build' industry sectors (around 30%) versus the 'government & infrastructure' sector (12%). They were also far more likely to be found in:

- Small organisations (those with up to 5 employees; 25% having back-ups) than medium sized ones (those with between 6 and 20 employees; 9% having back-ups).

- Those with small gas bills (less than $2,000 per annum; 26%) versus larger gas bills (15%).

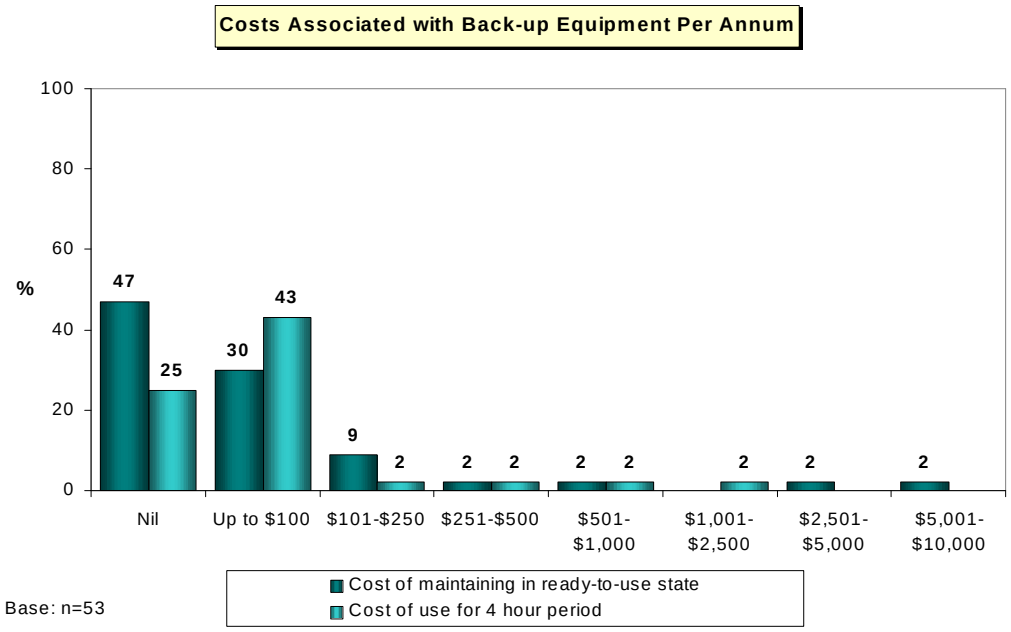


B4. Can you briefly describe your back-up equipment or back-up plans for me?

Whilst a wide range of back-up equipment or plans were described by those who had them, only 'portable / wall electric heaters' were mentioned by a large proportion of organisations (42%). Consistent with the fact that nearly 8 in 10 used gas for heating purposes, most back-ups described in fact related to heating - an additional one in ten organisations nominated each of either 'wood burner / heater' or 'reverse cycle air-conditioning', and 2% nominated 'column heating' with another 2% nominating 'oil heating'.

Notable minorities also described having 'electric cooking appliances' (19%), 'electricity' (with no further details being provided by respondents – 17%) and 'LPG / gas bottle' (15%).

There were no significant differences between sub-groups.



B5. Ignoring the initial purchase and set up costs of the back-up equipment or plan, about how much does this back-up equipment or plan cost you per year to maintain, ready to use if needed? (SINGLE RESPONSE)

B6. And what about the cost each time that back-up equipment or plan is actually used for a period of 4 hours? (SINGLE RESPONSE)

For over three quarters of the organisations interviewed (77%) the per annum cost to keep their back-up equipment / plan in a state of readiness was reasonably small – 'up to $100' or in fact 'nil'. For about 4% of organisations however, this cost was significant at somewhere between $2,500 and $10,000 per annum.

It is important to note that these costs do not include the initial purchase or set-up costs.

Cost per usage occasion of up to 4 hours was also low, either nil or up to $100 for the majority (68%), with no organisation incurring a cost in excess of $2,500.

U.2.3. Attitudes

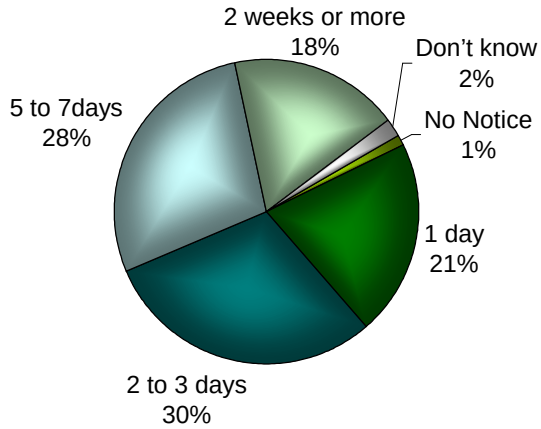
Calling ActewAGL to report a problem or disruption to the gas supply

Just under one in ten (9%) respondents claimed to have personally tried to call ActewAGL to report problems or disruptions to their gas supply in the past year; 1% of all respondents interviewed made calls related to the recent bush fires.

Those who had rated their overall gas supply as 'very good' or better were less likely to 'have tried to call ActewAGL to report a problem or disruption' (6% versus 17% for those rating it as only 'good').

However, those who had 'ever' had a gas supply interruption were more likely to 'have tried to call ActewAGL' in the past year (25%, versus only 5% who had 'never' experienced an interruption). Further, respondents from organisations with larger gas bills (in excess of $2,000 per annum) were more likely to have reported a problem in the past year (15%, versus only 6% of those with smaller gas bills).

Acceptable Notice for Cut-off to Undertake Planned Maintenance Work



Base: n=240

A6. If ActewAGL needed to cut off the natural gas to to do some planned maintenance work , how much notice, if any would you find acceptable? Would you say…..(SINGLE RESPONSE)

Eighty percent of organisations nominated a period of up to one week as being 'acceptable' as the notification period for cutting off the gas in order to undertake planned maintenance work; while only about one in five insisted on up to one day notice, about 30% for each found '2 to 3 days' and '5 to 7 days' notice 'acceptable'. Almost one in five (18%) stated that '2 weeks or more' was required.

A number of significant differences in results between subgroups were identified:

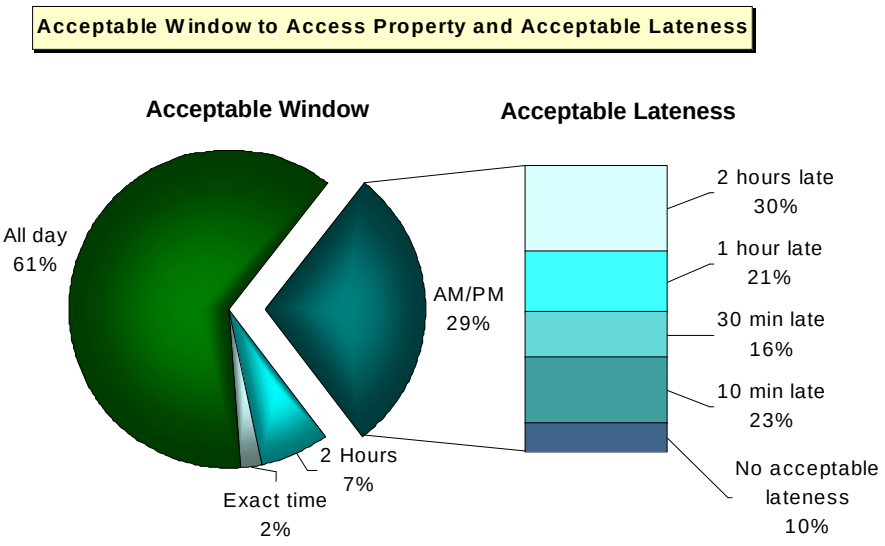
- Smaller organisations were less demanding by being more willing to accept shorter notice periods than larger organisations:
    - Organisations with '0 to 5 employees' were more likely to accept '1 day' notice (25%, versus only 11% for large organisations with 21 or more employees).
    - Organisations with '21 or more employees' were more likely to seek '2 weeks or more' notice (33%, versus only 14% for organisations with 'up to 5 employees').
    - Multi-site organisations were more likely to seek '2 weeks or more' notice (35%, versus only 15% for single-site organisations).
- There appeared to be a positive relationship between the 'gas bill size' and the 'length of 'acceptable' notice for cut-off' such that the length of notice required extended with the

bill size. For example, with regards to '2 weeks or more' being 'acceptable':

- 9% of those with a gas bill of 'less than $2,000 per annum' desired '2 weeks or more'
- this increased to 23% for those with a bill of between '$2,000 and $7,500 per annum'
- which increased to 47% of those with bills 'over $7,500 per annum'.

The average number of days notice thought to be 'acceptable' was significantly greater for the 'hospitality' industry sector than it was for the 'services' and 'grow/build' industry sectors (average of 7 days, versus 4.7 and 4.4 days respectively).

Finally, home office based organisations were more likely to accept a shorter notification period than were organisations operating in dedicated business premises (28% versus 9% respectively accepting 'one day', and 10% versus 31% respectively desiring '2 weeks or more').



Base: Acceptable window n=240; Acceptable lateness for am/pm window n=70

A7. If ActewAGL needed access to your property to carry out some planned maintenance work, would….be acceptable to you? (SINGLE RESPONSE)

A8. And how much after that window would you find their arrival to still be acceptable to you? (SINGLE RESPONSE)

'Acceptable' window

About 6 in 10 organisations interviewed considered an 'entire day' to be an 'acceptable' window for accessing property to undertake planned maintenance work. One in three (29%) thought a shorter 'morning/afternoon' window was 'acceptable'. Fewer than 10% insisted on a smaller window.

A number of significant differences in results between subgroups were identified in terms of appointment windows for property access:

- The 'acceptable' window varied by industry sector:
    - The 'hospitality' sector desired significantly smaller appointment windows than did the 'services', 'grow/build' and 'government & infrastructure' industry sectors; for example, the 'hospitality' sector was less likely to accept an 'all day' window (36% versus over 60% of each of the latter sectors), and relatively more likely to insist on a 'morning/afternoon' window (47% versus fewer than 30% of each of the latter sectors).
- Organisations with a smaller annual gas bill 'less $2,000' were less demanding of a tight window than were those with larger bills. For example they were more likely to nominate 'all day' as 'acceptable' (68% versus 49% for the latter), and less likely to nominate a '2 hour' window (5% versus 16% for organisations with gas bills in excess of

$7,500 per annum).

- Home office based organisations were also less demanding with 68% finding an 'all day' window 'acceptable' (versus 49% of dedicated office based organisations), and only 3% desiring a '2 hour' window (versus 13% of dedicated office based organisations).

'Acceptable' lateness

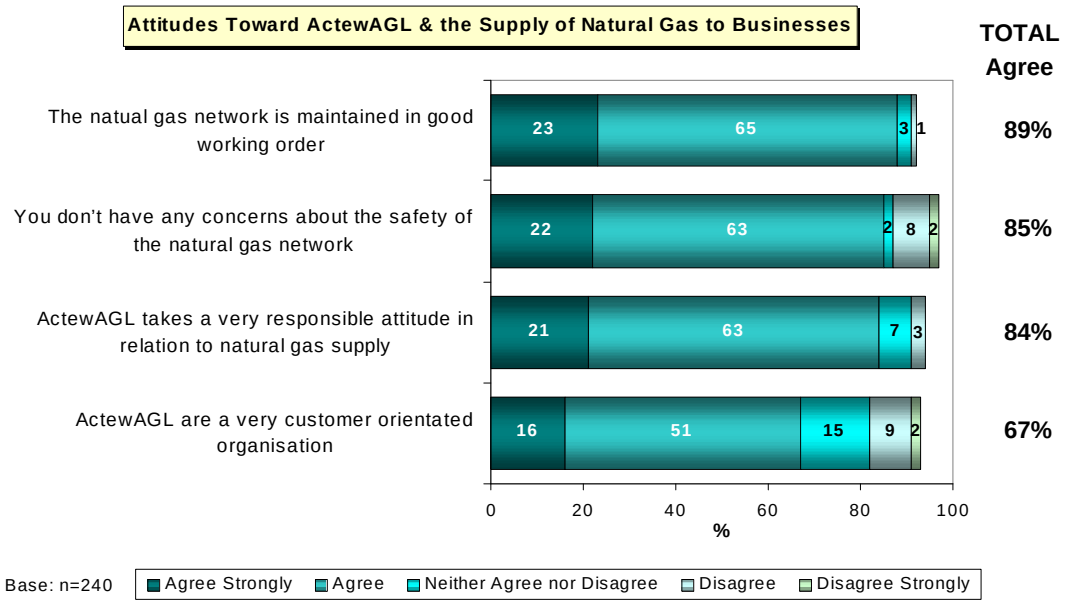
All those who considered a window smaller than an entire day to be 'acceptable' notification for property access, were also asked about the amount of 'lateness' they would accept in meeting that window. Of those stipulating a 'morning/afternoon' window[100] (70 respondents), almost all (90%) considered some amount of lateness to be 'acceptable', although the extent of lateness varied widely:

- 23% considered only '10 minutes' late to be 'acceptable', whilst at the other end of the spectrum,

- 30% felt 'two hours' late was 'acceptable'.

[100] Sample sizes were too small to analyse 'acceptable lateness' windows among those choosing appointment windows other than 'morning/afternoon'.

Organisations rated their level of agreement with ten aspects of ActewAGL's service. Results are displayed and discussed over 3 graphs below, in descending order of the level of total agreement.



A9. I am now going to read out some statements about natural gas supply to businesses, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that…..[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree? (SINGLE RESPONSE)

Very high levels of total agreement (in excess of 80%) among organisations were found with respect to the following aspects:

- 'the natural gas network is maintained in good working order' (89% agreed),
- that they 'do not have any concerns about the safety of the natural gas network' (85% agreeing) and that,
- 'ActewAGL takes a very responsible attitude to the natural gas supply' (84% agreed).

Two thirds 'agreed' or 'agreed strongly' that 'ActewAGL is a very customer orientated organisation'.

Unfavourable responses were also low with respect to all four aspects, although the 'total disagreement' levels were 10% in relation to 'not having safety concerns' and 'customer orientation'.

A number of significant differences in results between subgroups were identified and are

discussed below for each service aspect.

Perceptions of the natural gas network being maintained in good working order

Perceptions of the gas network being well maintained were more favourable among those who were more favourably disposed to the gas supply and ActewAGL overall, as well as among those with larger gas bills. Specifically:

- Organisations that rated their gas supply as 'excellent' were more likely to 'agree strongly' that the 'natural gas network is maintained in good working order' (31% versus only 16% among those who rated their gas supply as only 'good').

- Those organisations who rated ActewAGL as 'very good' or better were more likely to 'agree strongly' with this statement (30%, versus only 12%among those who rated their gas supply as only 'good').

- 'Total agreement' among organisations with larger annual gas bills (more than $2,000) was significantly higher than among those with smaller bills (95% versus 85%).

Don't have concerns about the safety of the natural gas network

Safety concerns were less prevalent among those rating their gas supply and ActewAGL more favourably, as well as among those who have never experienced an interruption:

- Organisations that rated their gas supply as 'very good' or better were more likely to 'agree strongly' (27% versus only 11% among organisations rating the gas supply as only 'good').

- Similarly for ratings of ActewAGL, those rating the organisation as 'very good' or better were more likely to 'agree strongly' (28% versus only 9% among those rating it as only 'good').

- Those who had 'never' experienced a gas supply interruptions were more likely to 'agree strongly' (25% versus only 10% among those that had experienced an interruption).

Safety concerns were also less likely among organisations in the 'hospitality' industry and larger organisations:

- The 'hospitality' industry sector was more likely to 'agree strongly' (39%, versus less than 20% for each of the 'grow / build' and 'government & infrastructure' sectors).

- Large organisations (21 or more employees; 96%) were more likely to 'agree strongly'

than small organisations (up to 5 employees; 80%).

Perceptions of ActewAGL taking a very responsible attitude to the natural gas supply

Consistent with perceptions of other aspects of the gas service, perceptions of 'ActewAGL as taking a very responsible attitude to the natural gas supply' were more favourable when perceptions of ActewAGL and the gas supply overall were particularly favourable:

- Total agreement was higher among those rating their gas supply as 'very good' or better (87%, versus 75% among those rating it as only 'good').

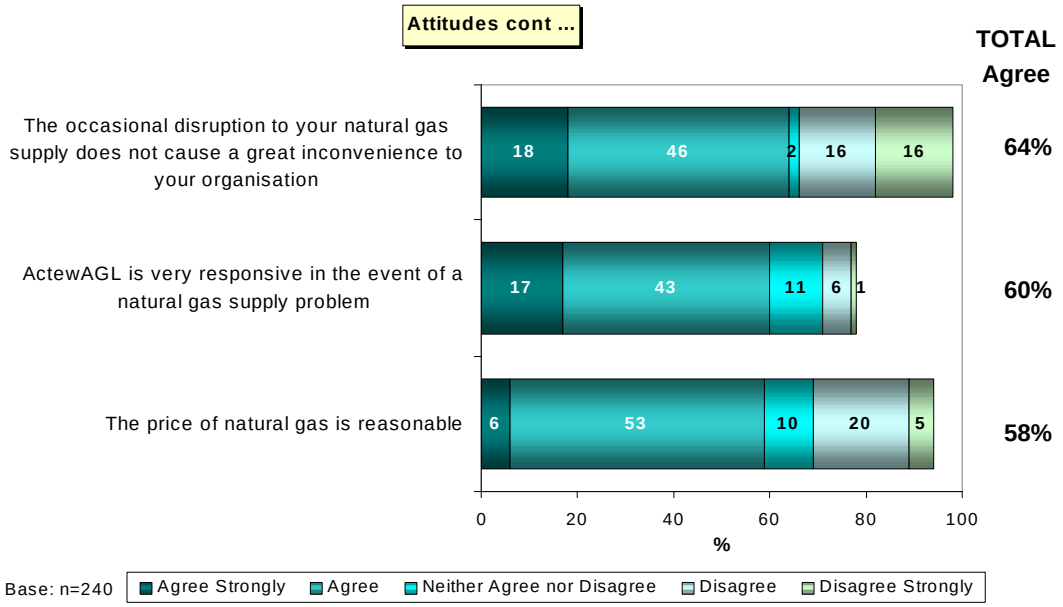
- Those who rated ActewAGL as 'very good' or better were more likely to 'agree strongly' (28%, versus only 8% among those rating ActewAGL as only 'good').

Perceptions of ActewAGL being a very customer orientated organisation

Again perceptions of 'ActewAGL being very customer oriented' were more likely with among those with more favourable views of the gas supply and ActewAGL overall. Specifically:

- The level of 'total agreement' among customers who rated their gas supply as 'very good' or better was higher (72%) than that among those rating ActewAGL as only 'good' (55%).

- The level of 'total agreement' among those who rated ActewAGL overall as 'excellent' was higher (80%) than among those rating ActewAGL as only 'good' (62%).



A9. I am now going to read out some statements about natural gas supply to businesses, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that.....[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree? (SINGLE RESPONSE)

The majority of responses were favourable in relation to the following service aspects, with levels of 'total agreement' in the order of 60% for each:

- 'the occasional disruption to your natural gas supply does not cause a great inconvenience to your organisation',
- 'ActewAGL is very responsive in the event of a natural gas supply problem',
- 'the price of natural gas is reasonable'.

However, levels of 'total disagreement' were notable in relation to 'disruptions not causing an inconvenience' (32%) and in relation to the 'price of gas being reasonable' (25%).

The significant differences identified between subgroups are discussed below.

<u>Occasional disruption to natural gas supply does not cause a great inconvenience</u>

Inconvenience due to a supply interruption is less likely among those rating ActewAGL and their gas supply more favourably:

- Those rating ActewAGL as 'very good' or better were more likely to 'agree strongly' than were those rating it as only 'good' (22% versus 9% respectively).

- 'Total disagreement' with this statement was higher among those rating their overall gas supply as only 'good' (25%) compared with those rating it as 'very good' or better (only 12%).

Inconvenience caused by a disruption was also less likely for those organisations in the 'services' and 'grow/build' industry sectors, small organisations and those with back-up equipment/plans in place:

- The 'services' and 'grow/build/ sectors were far more likely to 'agree' or 'agree strongly' (77%) that they were not greatly inconvenienced than were the 'government & infrastructure' and 'hospitality' sectors (59% and 31% respectively).

- Small organisations (fewer than 5 employees) were less likely to be inconvenienced, with 'total agreement' of 73% versus larger organisations (fewer than 50%), as were those with smaller annual bill sizes (less than $2,000; 78%) versus those with larger bills (more than $2,000; 37%). Consistent with this theme, 'total disagreement' was lower among single-site organisations (30%) than it was for multi-site organisations (48%).

- Those with back-up equipment were more likely to 'agree strongly' (30%) than those without a back-up (15%).

Perceptions of ActewAGL being very responsive in the event of a natural gas supply problem

- The 'hospitality' sector was more likely to 'agree strongly' with the statement 'ActewAGL is very responsive in the event of a natural gas supply problem' (31%) than were the 'grow/build' and 'government & infrastructure' industry sectors (11% and 12% respectively).

- There were no other significant subgroup differences for this aspect.

Perceptions of the price of natural gas as being reasonable

Consistent with ratings of most other aspects of the gas supply, perceptions of the 'price of gas being reasonable' were more favourable among those particularly favourably disposed toward ActewAGL and the gas supply overall:

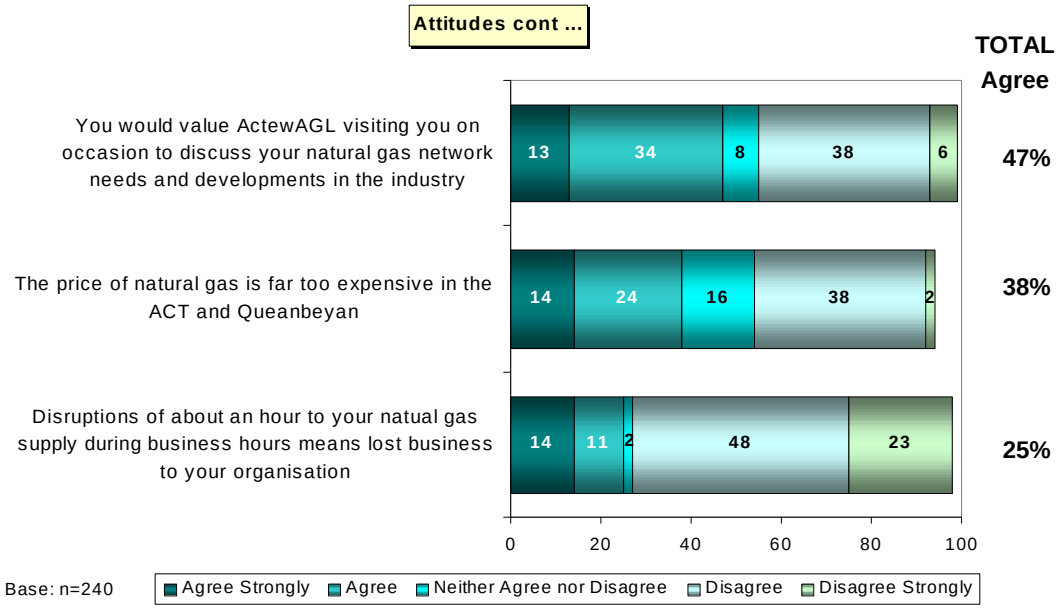
- Those rating their gas supply as 'excellent' were more likely to 'agree strongly' (13%) compared with those rating it as either 'very good' or 'good' (1 to 2%).

- Those who rated ActewAGL as 'very good' or better were less likely to 'disagree' or 'disagree strongly' (19%) that the 'price of gas is reasonable', than were those who rated ActewAGL as only 'good' (35%).

Perceptions were also more favourable among organisations who have:

- 'Never' had a gas supply interruption - more likely to 'agree' or to 'agree strongly' (62%, versus 44% among those who had experienced an interruption).

- Smaller gas bills (less than $2,000) - 'total disagreement' that the 'price of natural gas is reasonable', was lower for organisations with smaller gas bills (21%) than for those with larger bills (34%).



A9. I am now going to read out some statements about natural gas supply to businesses, and I'd like you to indicate how strongly you agree or disagree with each. Would you say that you 'disagree', 'neither agree nor disagree', or 'agree' that…..[INSERT STATEMENT]? QUALIFY: Would that be just disagree/agree or 'strongly' disagree/agree? (SINGLE RESPONSE)

Organisations were about evenly divided between those having and not having an interest in '… a visit from ActewAGL to discuss their gas needs and industry developments' (47% versus 44% respectively).

Consistent with the direction of perceptions of the price of natural gas being 'reasonable' (already discussed), 'total agreement' was at 38% in relation to 'natural gas being far too expensive'; a similar proportion 'disagreed' or 'disagreed strongly' (39%). Sixteen percent of organisations responding with 'neither agree nor disagree', and 6% chose 'don't know'.

One quarter of those interviewed said that 'disruptions of about an hour to their natural gas supply during business hours means lost business to their organisation'. A total of 71% 'disagreed' or 'disagreed strongly'.

The significant differences in results between subgroups are discussed below.

<u>Would value ActewAGL visiting them to discuss their natural gas network needs</u>

Interest in ActewAGL visitation was higher among:

- The 'hospitality' industry sector - more likely to 'agree' or to 'agree strongly' with this statement (67%) compared with the 'services' and 'grow/build' sectors (39% and 42% respectively).

- Organisations with large annual gas bills (over $2,000 per annum) - 'total agreement' was 63% compared with 28% for those with smaller bills.

Perceptions of the price of natural gas as far too expensive in the ACT and Queanbeyan

Perceptions of the 'price of gas as far too expensive' were more favourable (ie. lower levels of 'total agreement') among:

- Organisations that rated their gas supply as 'very good' or better (34%) than it was for those who rated it as only 'good' (48%).

- Those that rated ActewAGL as 'very good' or better (32%) than it was for those who rated ActewAGL as only 'good' (46%).

- Those who have 'never' experienced an interruption (33%) than those who have (56%).

- Those with small annual gas bill's (32%) than those with bills of between $2,000 and $7,500 (59%).

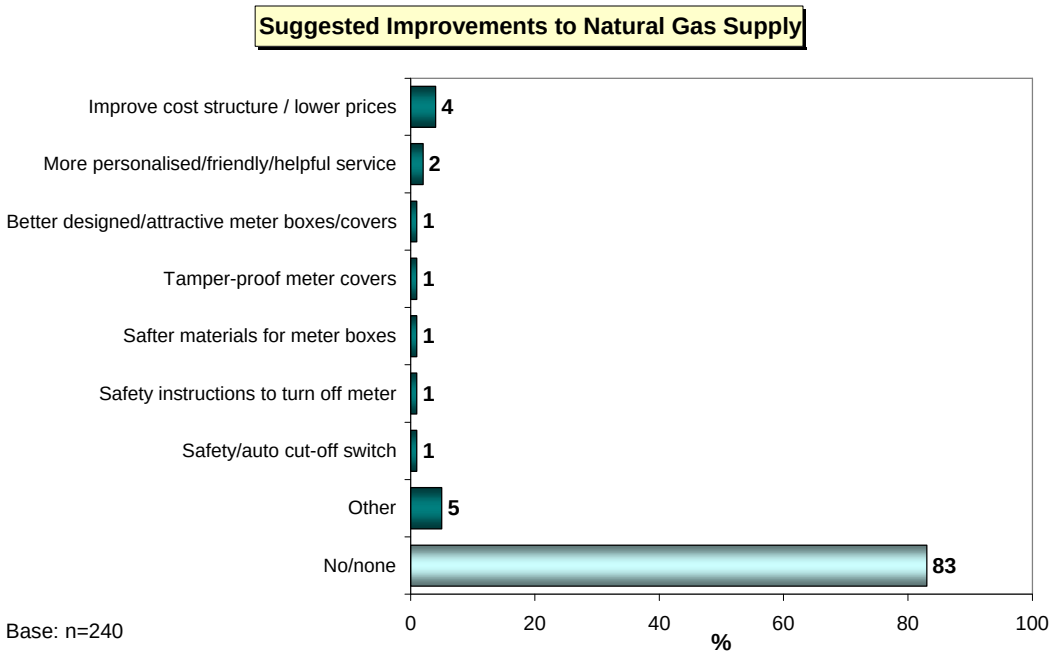
Disruptions to natural gas supply means lost business

Lost business due to gas disruptions were less likely (ie. more favourable having lower levels of 'total agreement') among the following subgroups:

- Those rating their gas supply as 'very good' or better (21%) compared with those rating it as only 'good' (34%).

- The 'services', 'grow/build' and 'government & infrastructure' sectors (24% or lower levels of agreement), than those in the 'hospitality' sector (64%).

- Smaller organisations (those with up to 5 employees; 19%) compared with larger organisations (over one third 'total agreement'), as well as those with smaller gas bills (under $2,000; 11%) compared with larger billing organisations (52%).

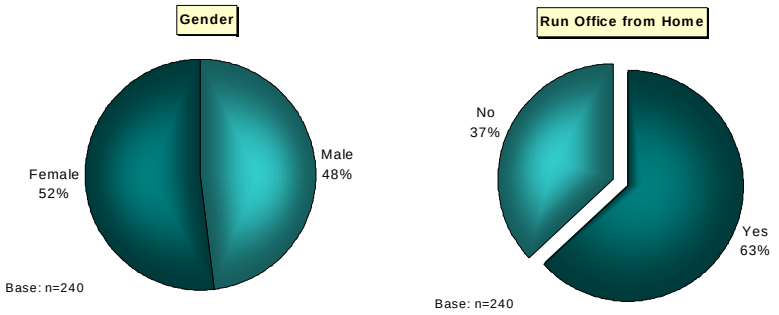


A10. Are there any improvements that you would like to see made to your natural gas supply to your site? (MULTIPLE RESPONSE)

'No' improvements to the gas supply was considered necessary by the majority of respondents interviewed (83%).

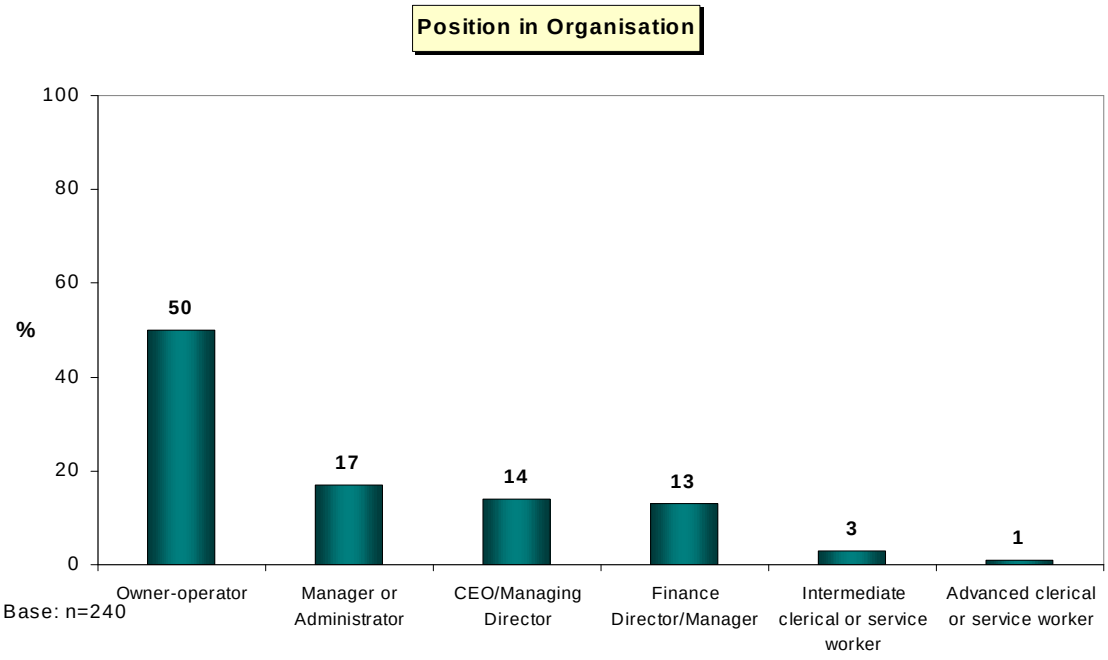
Suggestions that were made varied widely, and had little commonality across respondents. 'Improving the cost structure and reducing prices' was suggested by 4% of organisations, and safety related suggestions were made by a similar proportion: 'safer materials for meter boxes' (1%), 'safety instructions on meter boxes' (1%), 'safety / automatic cut-off switch' (1%).

U.2.4. Organisation and Respondent Profile



F3. Do you currently run your office from home? (SINGLE RESPONSE)

Those interviewed comprised an approximately equal proportion of males and females, and 63% claimed to be running an office from their own home.



F2. What is your position in the organisation? (SINGLE RESPONSE)

Half of respondents were the 'owner-operator' of the business. Approximately equal proportions (between 13% and 17%) were either the 'manager / administrator', 'CEO / MD' or 'Finance Director / Manager'. In fact almost all respondents held senior management roles within the business.

APPENDIX V. APPLICATION OF THE WTP ESTIMATES

This appendix contains the results of analysis undertaken to assess a number of incremental changes that could be made to existing service levels. The analysis uses estimates of customers' willingness to pay generated from the survey, and compares them to the cost of initiating the service change.

Note that at the time of writing this report, incremental cost estimates were not available from ActewAGL/ACTEW for water and wastewater. The appendix therefore does not include analysis for the water/wastewater service.

V.1. Electricity

In each of the service scenarios considered below, it is assumed that the current service level is an average of 1.2 outages per customer per year, each with a duration of 1.5 hours. It is also assumed that 90 percent of customers are residential.

Benefits are calculated assuming the average bills for sampled customers in the survey, which is $815 for residential customers and $5596 for commercial customers. The benefits generated from each service change can be adjusted proportionately insofar as the average bills for all of ActewAGL's customers differ from those for the sampled customers.

V.1.1. Tree maintenance program to improve network reliability

Network reliability (ie, number of outages a year) could be improved in the order of 33% to 50% if ActewAGL were to enact a tree maintenance program that prevented its wires from being snagged.

The estimated cost of such an initiative would be $44 per customer per annum (although, note that this estimated cost has not been adjusted downwards by the amount that consumers already pay for tree maintenance in the vicinity of ActewAGL's wires).

The average benefits per customer of a 33% reduction in frequency of outages would be:

- Residential: $ 16
- Commercial: $156
- All customers: $30

The change would not be of benefit to residential customers, on average, and would be of benefit to commercial customers, on average. For all customers combined, the costs would exceed the benefits if the measures reduce outages by only 33 percent.

The average benefits per customer of a 50% reduction in frequency of outages are:

- Residential: $ 24
- Commercial: $244
- All customers: $46

The change would not be of net benefit to residential customers, on average, and would be of net benefit to commercial customers, on average. For all customers combined, the benefits slightly exceed the costs if the measures reduce outages by 50 percent.

This measure is warranted only if (i) it was assured of attaining a 50% reduction in outages, (ii) the benefits are not overestimated at all, and (iii) the fact that it hurts the vast majority of customers is not a consideration. Given these issues, it seems prudent ***not*** to undertake these measures.

V.1.2. Technical improvements of feeders and re-closers to improve network reliability

Network reliability (i.e. number of outages a year) could be improved in the order of 33% if ActewAGL were to make technical improvements by way of feeders and re-closers. ActewAGL estimate that the cost of this initiative would be $7.20 per customer per annum.

The benefits are given above for a 33% reduction in frequency of outages. Residential and commercial customers are both helped if this reduction can be attained at a cost of $7.20 per customer. For all customers combined, the benefits exceed the costs. This measure is warranted unless benefits are overestimated by more than a factor of four, which is unlikely. It therefore seems prudent to undertake these measures.

V.1.3. Changes in maintenance crew's practices to improve network reliability

It may be possible to improve network reliability (i.e. number of outages a year) in the order of 10% to 15% if ActewAGL were to add additional maintenance crews and improve work practices. ActewAGL estimate that the cost of such an initiative would be $4 per customer per annum.

The average benefits per customer of a 10% reduction in frequency of outages are:

- Residential: $ 4.89
- Commercial: $45.56
- All customers: $8.96

The change would be of benefit to both residential and commercial customers. For all customers combined, the benefits would exceed the costs even if the measures produced only a 10% reduction in outages, unless benefits were overestimated by more than a factor of two.

The average benefits per customer of a 15% reduction in frequency of outages are:

- Residential: $ 7.34
- Commercial: $68.87
- All customers: $13.50

The change would help residential and commercial customers even more. For all customers combined, the benefits exceed the costs if the measures produce a 15% reduction in outages, unless benefits were overestimated by more than a factor of three.

It seems prudent to undertake these measures.

V.1.4. Changes in maintenance crew's practices to decrease network reliability

It may be possible to degrade network reliability (i.e. increase number of outages a year) by say 10% to 15% if ActewAGL were to reduce maintenance crews. ActewAGL estimate that this initiative could reduce costs by $4 per customer per annum.

The average lost benefits per customer of a 10% increase in frequency of outages are:

- Residential: $ 4.89
- Commercial: $44.28
- All customers: $8.83

The change would not be of benefit to residential and commercial customers, since the lost benefits exceed the cost savings. For all customers combined, the lost benefits would exceed the cost savings if the measures produced a 10% reduction in outages, unless lost benefits are overestimated by more than a factor of two.

The average lost benefits per customer of a 15% increase in frequency of outages are:

- Residential: $ 7.34
- Commercial: $65.98
- All customers: $13.21

The change would be of greater disbenefit to residential and commercial customers. For all customers combined, the lost benefits exceed the cost savings if the measures produce a 15% reduction in outages, unless lost benefits were overestimated by more than a factor of three.

It seems prudent not to undertake these measures.

V.1.5. Introduction of automatic switching to reduce expected length of outages

The length of outages could be reduced from approx 1.5 hrs on average to as little as 0.5 hr by way of automatic switching. The estimated cost of such an initiative is $90 per customer per annum.

The average benefits per customer of this 1 hour reduction in length of outages are:

- Residential: $ 34
- Commercial: $863
- All customers: $117

The change would not be of benefit to residential customers, but would help commercial customers. For all customers combined, the benefits would exceed the costs, unless the benefits are overestimated by 20 percent or more.

Given this small margin for error and the fact that the vast majority of customers would be hurt by the measure, it seems prudent not to undertake this measure.

V.1.6. Improved productivity of maintenance crews to reduce expected length of outages

It may be possible to reduce the length of outages from approx 1.5 hrs on average to 1.0 hr by way of improved productivity and live wire maintenance crews. The estimated cost of this initiative is $8 per customer per annum.

The average benefits per customer of this half-hour reduction in length of outages are:

- Residential: $ 16.
- Commercial: $377.
- All customers: $52.

The change would help both residential and commercial customers. For all customers combined, the benefits would exceed the costs, unless benefits are overestimated by more than a factor of 6.

It seems prudent to undertake this measure.

V.1.7. Cost savings in return for an increase in expected length of outages

It may be possible to reduce electricity costs by $8 per customer per annum if customers were willing to accept an increase in average outage length, say, from 1.0 hr to 4.0 hrs.

The average lost benefits per customer of a one hour increase in length of outages are:

- Residential: $ 31.
- Commercial: 578.
- All customers: 85.

The change would not be of benefit to either residential or commercial customers. For all customers combined, the lost benefits would exceed the cost savings, unless benefits are overestimated by more than a factor of 10.

It seems prudent not to undertake this measure.

V.1.8. Calls are answered by a person rather than a machine

ActewAGL estimate that by adding 25 staff to the call centre, the call centre should be able to answer all calls personally in most circumstances. The cost of adding 25 staff would cost approximately $20 per customer per annum.

The average benefits per customer of having a person answer the phone are:

- Residential: $ 152.
- Commercial: $1024.
- All customers: $239.

The change would help both residential and commercial customers. For all customers combined, the benefits would exceed the costs, unless benefits are overestimated by more than a factor of nearly 12.

It seems prudent to undertake this measure.

V.2. Gas

In each of the service scenarios considered below, benefits are calculated at the average bills of sampled gas customers: $671 for residential customers and $4986 for commercial customers. The benefits generated from each service change can be adjusted proportionately insofar as the average bills for all of ActewAGL's customers differ from those for the sampled customers.

It is also assumed that 90 percent of customers are residential.

V.2.1. Service Scenario 1: Reduce frequency of gas outages

ActewAGL advise that network reliability (i.e. number of outages a year) could be improved from “once every 2 years”(the status quo) to “once every 5 years” for a cost of $22 per customer per annum.

The average benefits per customer of this reduction in number of gas outages are:

- Residential: $ 6.53.
- Commercial: 68.80.
- All customers: 12.76.

The change would not be of benefit to residential customers, but it would be of benefit to commercial customers. For all customers combined, the costs would exceed the benefits.

It seems prudent not to undertake this measure.

V.2.2. Service Scenario 2: Reduce frequency of gas outages

ActewAGL advise that reliability could be improved from “once every 5 years” to “once every 10 years” for an additional cost of $44 per customer per annum. Although, this measure could be undertaken only if the previous measure was also undertaken.

The EXTRA benefits per customer of this addition reduction in number of gas outages are:

- Residential: $ 2.18.
- Commercial: 22.94.
- All customers: 4.26.

The change would not be of benefit to either residential or commercial customers. For all customers combined, the costs would exceed the benefits.

It seems prudent not to undertake this measure, even if the previous measure were undertaken.

V.2.3. Service Scenario 3: Increase frequency of gas outages

ActewAGL advise that network reliability (i.e. number of outages a year) could be degraded from “once every 2 years”(the status quo) to “1 time per year” for a saving to the customer of $22.

The average lost benefits per customer of this increase in number of gas outages are:

- Residential: $ 11
- Commercial: $115
- All customers: $21

The change would be of benefit to residential customers, but would not be of benefit to commercial customers. For all customers combined, the cost savings would slightly exceed the lost benefits. If lost benefits are overestimated, this measure becomes more attractive.

It seems prudent to undertake this measure, but a better option, if it were possible, would be to maintain current reliability for commercial customers while degrading reliability as described for residential customers.

V.2.4. Service Scenario 4: Reduce number of outages occurring in winter

ActewAGL advise that network reliability to the extent that all controllable events involving maintenance could be undertaken at a time other than in winter for a cost of $22 per customer per annum.

Assuming that the share of outages that occur in winter is now 25%, and that this measure would reduce this share to 0%, the average benefits per customer of this shift in gas outages to non-winter are:

- Residential: $ 30.
- Commercial: 268.
- All customers: 54.

The change would be of benefit to both residential and commercial customers. For all customers combined, the benefits would exceed the costs unless benefits are overestimated by more than a factor of 2.

It seems prudent to undertake this measure.

V.2.5. Service Scenario 5: Reduce length of gas outages

ActewAGL advise that the average duration of an outage in the ACT is approximately 4 or 5 hrs. To reduce the duration of an outage from 4 hrs to 2 hrs would cost $4 per customer per annum.

The average benefits per customer of a reduction in length of gas outages from 4 to 2 hours are:

- Residential: $ 15.

- Commercial: 157
- All customers: 30.

The change would be of benefit to both residential and commercial customers. For all customers combined, the benefits would exceed the costs unless benefits are overestimated by more than a factor of 7.

It seems prudent to undertake this measure.

V.2.6. Service Scenario 6: Reduce length of gas outages

To reduce the duration from 2 hrs to 1 hour would cost $7 per customer per annum. This measure can be taken only if the previous one has also been taken.

The average benefits per customer of a reduction in length of gas outages from 2 to 1 hours are:

- Residential: $ 7.73.
- Commercial: 78.30
- All customers: 14.79

The change would be of benefit to both residential and help commercial customers. For all customers combined, the benefits would exceed the costs unless benefits are overestimated by more than a factor of 2.

It seems prudent to undertake this measure.

V.2.7. Service Scenario 6: Changed timing of gas outages

ActewAGL's maintenance is generally conducted during business hours on a weekday. To comply with commercial customer desire that maintenance be conducted Mon-Fri after midnight it would cost ALL customers (Commercial and Residential) $6 per customer per annum.

The average benefits per customer of a change in the time of commercial customers' outages hours are:

- Residential: $ 0.
- Commercial: 765
- All customers: 77.

The change would not be of benefit to residential customers, but would be of benefit to commercial customers. For all customers combined, the benefits would exceed the costs unless benefits are overestimated by more than a factor of 12.

It seems prudent to undertake this measure.

V.2.8. Service Scenario 7: Calls are answered by a person rather than a machine

ActewAGL advises that, for gas, it would cost an additional $17 per customer per annum to enable the call centre to answer all calls personally in most circumstances on their behalf.

The average benefits per customer of a having a person answer the phone are:

- Residential: $ 47.
- Commercial: 715
- All customers: 114.

The change would be of benefit to both residential and commercial customers. For all customers combined, the benefits would exceed the costs unless benefits are overestimated by more than a factor of 6.

It seems prudent to undertake this measure.

