Queensland Household Energy Survey 2019

Insights Report

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colmar brunton.

Contents.

Executive Summary.

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A lot has changed in 10 years

- On the whole we as Queenslanders are still very similar in our demographics and household structure as we were in 2009. There are some long-term shifts that are occurring, but they are slow to evolve.
- The technology that we use has changed, with new tech such as iPads/tablets, LED bulbs, and split system air conditioners coming in, and energy efficient fluorescent light bulbs, box air conditioners and Plasma TVs quickly losing penetration.

The biggest changes to energy saving behaviours have come from technology, not from individually motivated changes

- Individual day to day behaviour change routines to save more energy have not changed much over the past 10 years. The only notable shift has been more Queenslanders setting their air conditioning to 24 degrees.
- We have seen a big change to our household energy systems though with the huge increase in solar PV penetration. The increased penetration of solar PV has correlated very closely with the decline in attempts to reduce electricity usage.
- While the reasons and motivations for behavioural change are varied (eg some people look to shift their load so as to make more value of their system), this correlation shows that at the aggregate level the increase in solar PV has led to a shift in behaviour larger than any day to day behaviour change routine.
- This matches new academic thinking from Europe that shows energy saving initiatives that focus on individual motivation or education campaigns to change their day to day behaviour have lower influence on energy saving.
- Future behaviour change efforts focussed on technology may therefore be more effective than motivational or education led efforts.

Executive Summary.

Consumer intent is not a barrier to further rooftop solar PV growth

- Solar PV continues to reduce demand in the middle of the day, creating challenges at both the transmission and distribution network level.
- Based on consumer intent, it doesn't look likely that rooftop solar expansion will slow down soon. This is of course not a projection based on in-depth market data, but rather a view that consumer intent will not be a barrier to future growth.
- Currently 33% of Queensland residential households have rooftop solar, the highest penetration in the world alongside South Australia. And through looking at future intent, and barriers to buy (which are predominantly based on a lack of home ownership), it looks as though this could increase to 48% in the next 3-5 years, with a maximum headroom of 65% possible in the further future.

Decreasing battery system prices makes them more attainable for more Queenslanders

- Price and the long term return on investment have long been considerations for battery storage systems. In 2019 a model was released that meets the $10,000 for 13kWh capacity 'ideal' system.
- Even though battery storage systems are in less than 1% of homes, the continued decrease in price means that penetration will begin accelerating over the next few years. And we have begun seeing this acceleration, with the number of battery systems installed in Queensland doubling throughout 2019.

Executive Summary.

Electric Vehicles are still niche, but the tipping point is approaching

- Only 1.7% of respondents claim they own an EV.
- Electric vehicle registrations have seen a jump towards the end of 2019 following the introduction of the Tesla Model 3. This shows that a price closer to mainstream vehicles coupled with a range that more closely meets needs (450km) can have an impact on penetration of EVs.
- New models of EV slated for entry into the Queensland market will be even cheaper than the Tesla Model 3 and with a similar range, placing these models even closer to the Queensland market's needs and expectations. Once models get closer to $40k and even less, it is likely the market will open right up.

Younger Queenslanders have the highest interest in HEMS, and $200 is a key price threshold

- There is only moderate interest in HEMS services, with the greatest interest in receiving personal recommendations on how to save.
- The maximum most Queenslanders would pay for HEMS is $200, any higher and consideration sharply falls off.
- Younger Queenslanders are far more likely to pay for HEMS with 71% stating they would be willing to pay $200 for it. While 2 in 3 older Queenslanders (aged 55 and above) have no interest, whatever the price.

Executive Summary.

Price of electricity is no longer the looming spectre it was

- Prices have fallen (at least stated bill size has) over the past few years, reducing the amount of conversation in the media and around the dinner table.
- The majority of Queenslanders are still expecting price to keep going up, although expectations for huge price increases above15% have dramatically fallen away.
- In this context, it is no wonder than bill concern is at a 3 year low. Given the decreasing prices, it is also likely that bill concern will continue to fall into next year.

Deep Dive 1:
A Look Back in Time.

What's changed in our households?

A Look Back in Time.

1. On the whole we as Queenslanders are still very similar in our demographics and household structure as we were in 2009. There are some long-term shifts that are occurring, but they are slow to evolve.
    - We are gradually becoming older, with more of us relying on pensions and concessions.
    - We still live in houses, with apartment living gradually trending upwards.
    - Renting is gradually becoming more prevalent, yet ownership is still the dominant behaviour.
2. These slow demographic shifts highlight that most of the changes we see in the QHES are due to shift in attitudes and behaviours, rather than demographics.
3. Our finances (all Australians) however have shifted quite a bit.
    - We are earning more as inflation has risen.
    - However we now have to spend more on our 'needs' (essentials such as housing, schooling, healthcare and insurance), even as our 'desires' (discretionary items such as clothing, cars, and TVs) have become relatively cheaper.
4. Which means we are less confident as consumers (all Australians).

Queenslanders are getting older, and we are earning more on average.

We are older

% of Population Aged 60+

2009	2019
18%	21%

Source: ABS census data

We are older

Pension or Concession recipients

2009	2019
31%	39%

Source: ABS census data

We earn more

Average Household Income

2009	2019
$61k	$81k

Age from ABS census data
A7. What is your HOUSEHOLD income before tax including pensions, income from investments and family allowances?
Base: Total Sample (n=4,536)

There are no huge changes to the type of dwelling or home ownership status in Queensland, though there is an upwards trend in apartment living and renting.

We still live in houses

Type of dwelling

	2009	2019	
House	80%	76%	↓
Apartment	11%	15%	↑
Townhouse	7%	9%	↑

We still own our homes

Ownership Status

	2009	2019	
Rent	33%	35%	↓
Own	67%	65%	↑

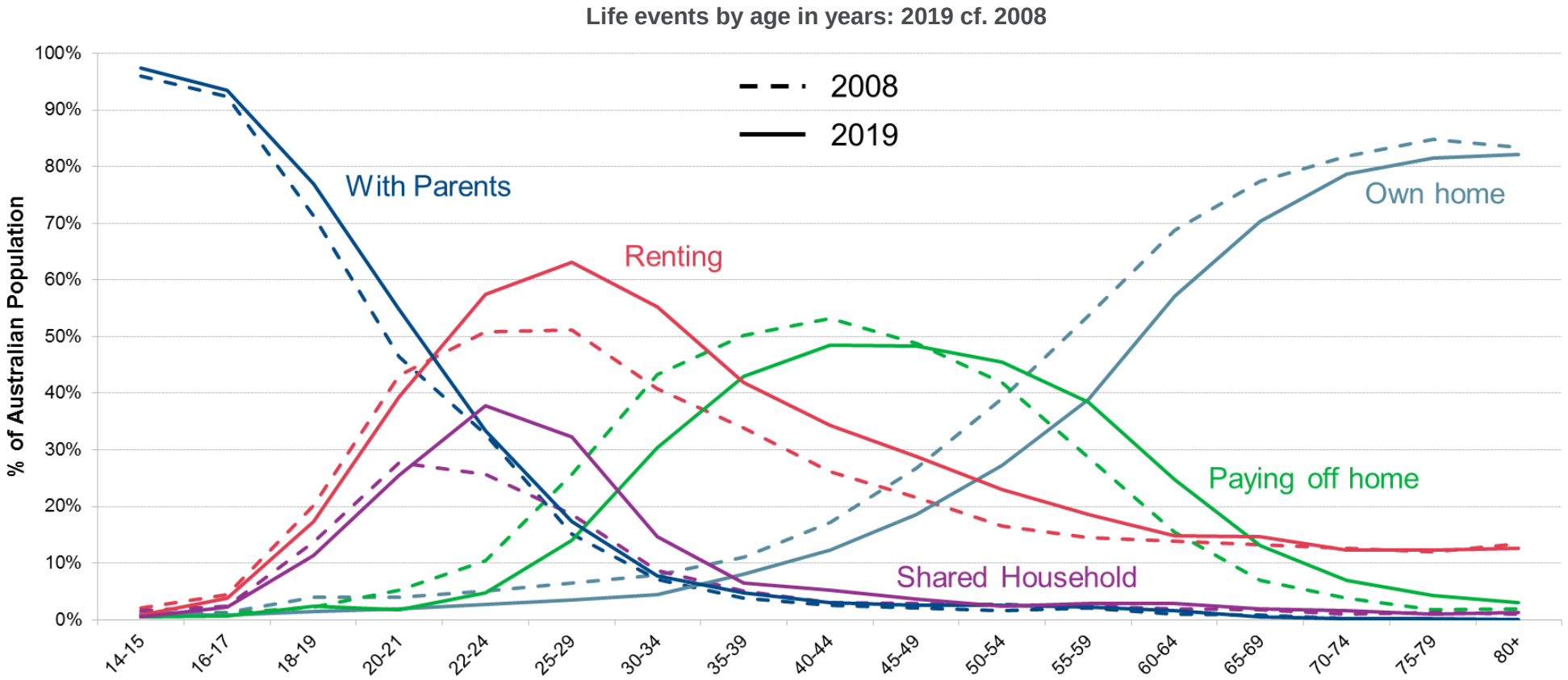
We've slightly downsized

Average # of Bedrooms

2009	2019
3.23	3.16

B2. Is your home…?
B6. How many bedrooms and bathrooms are in your home?
Ownership Status from ABS census 2006 vs 2016
Base: Total Sample (n=4,536)

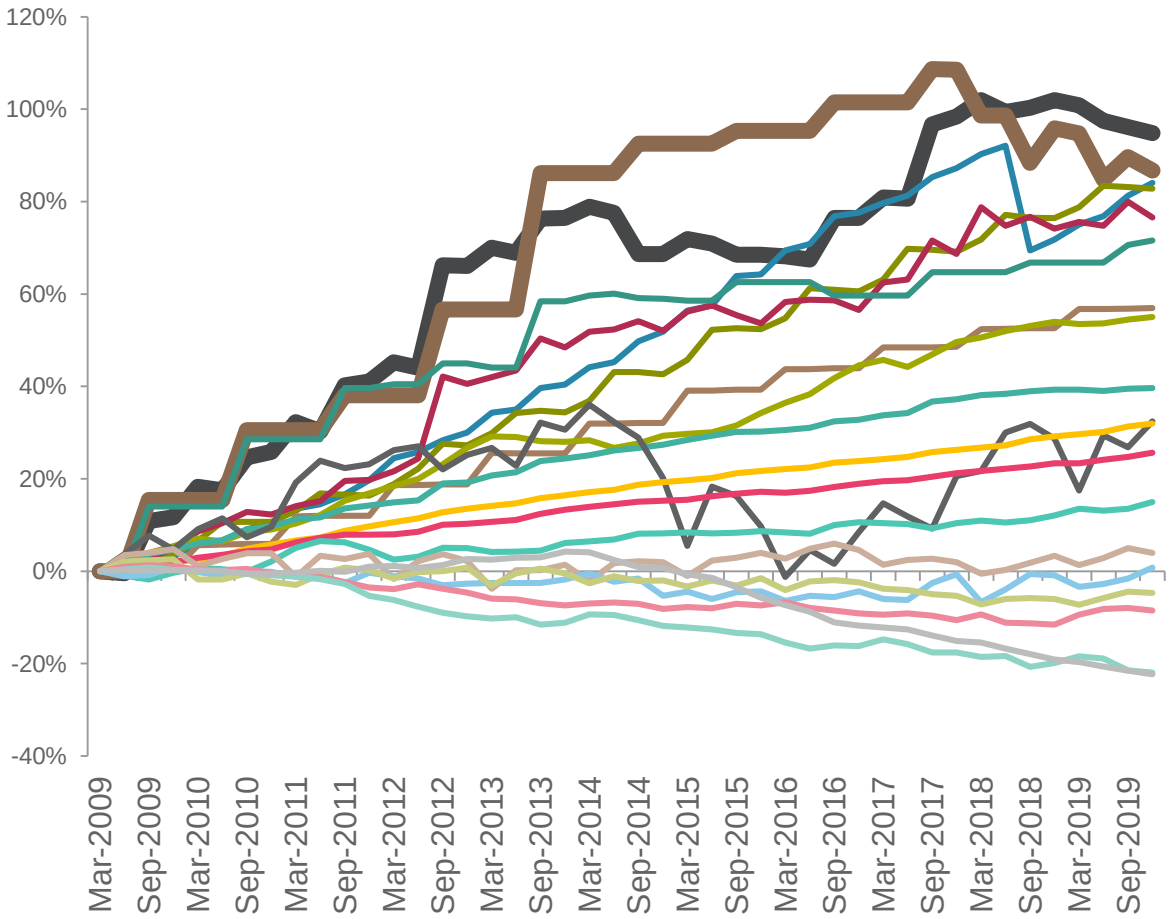
We are putting off major life events such as moving out of home and paying off a mortgage until later in life.



Source: http://www.roymorgan.com/findings/8126-state-of-the-nation-sotn-media-happening-later-in-life-september-2019-201909090413

Our finances are changing. For all Australians, desires have become cheaper as needs have become more expensive, outstripping our incomes. Electricity has increased the most, both across Australia and in Brisbane.

Selected Australian Goods & Services Vs Average CPI & Wages



- Electricity (+95%)
- Electricity (Brisbane) (+87%)
- Child care (+84%)
- Medical & Hospital (+A52%)
- Gas (+77%)
- Water & Sewerage (+72%)
- Education (+57%)
- Insurance (+55%)
- Housing (+40%)
- Petrol (+32%)
- WAGE Price Index (+32%)
- Official CPI (+26%)
- Food and Beverages (non-alcohol) (+15%)
- Furniture (+4%)
- TVs and computing (+1%)
- Clothing & Footwear (-5%)
- Motor Vehicles (-9%)
- Games & Toys (-22%)
- Phones & Mobiles (-22%)

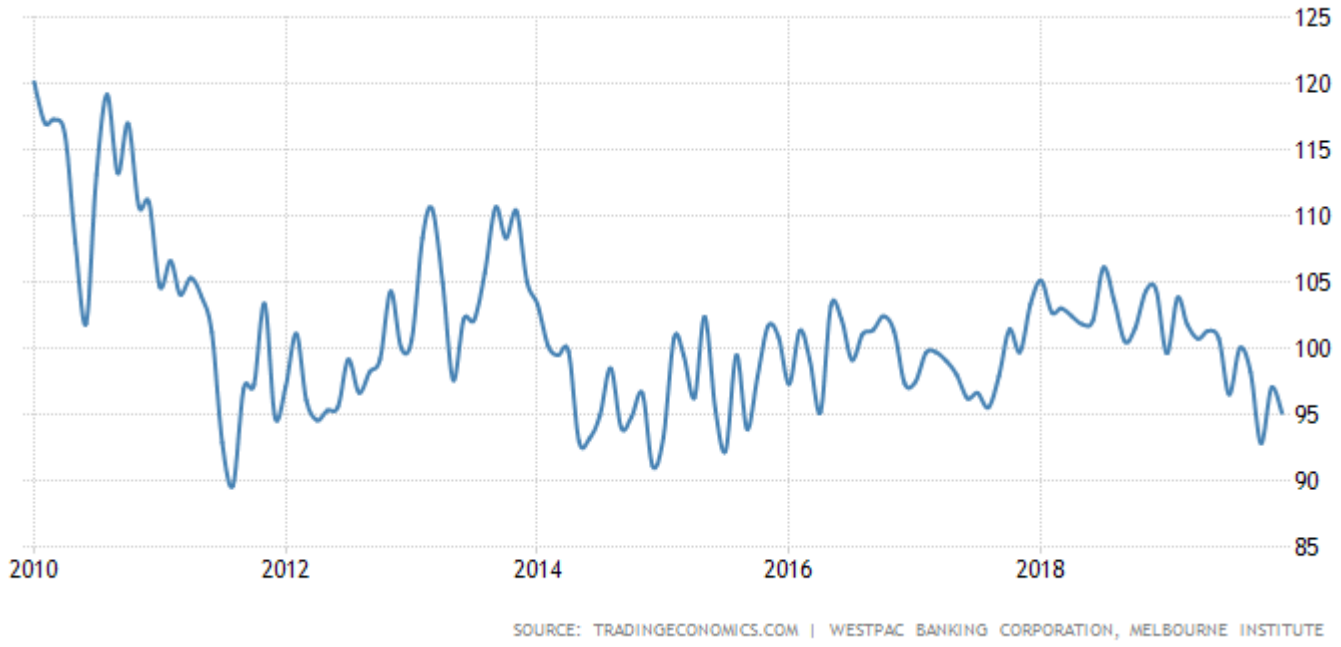
Becoming relatively more expensive: increased faster than wages. Predominantly 'needs': eg utilities, child care, health, education, housing.

Becoming relatively cheaper: increased slower than wages or decreased. Predominantly 'desires': eg phones, electronics, games, cars, clothing.

Source: ABS CPI and Wage Price Index data. Note data not available for all Queensland, so Australia used for all services, and Brisbane shown for electricity

So it is no surprise that our consumer confidence has taken a hit.

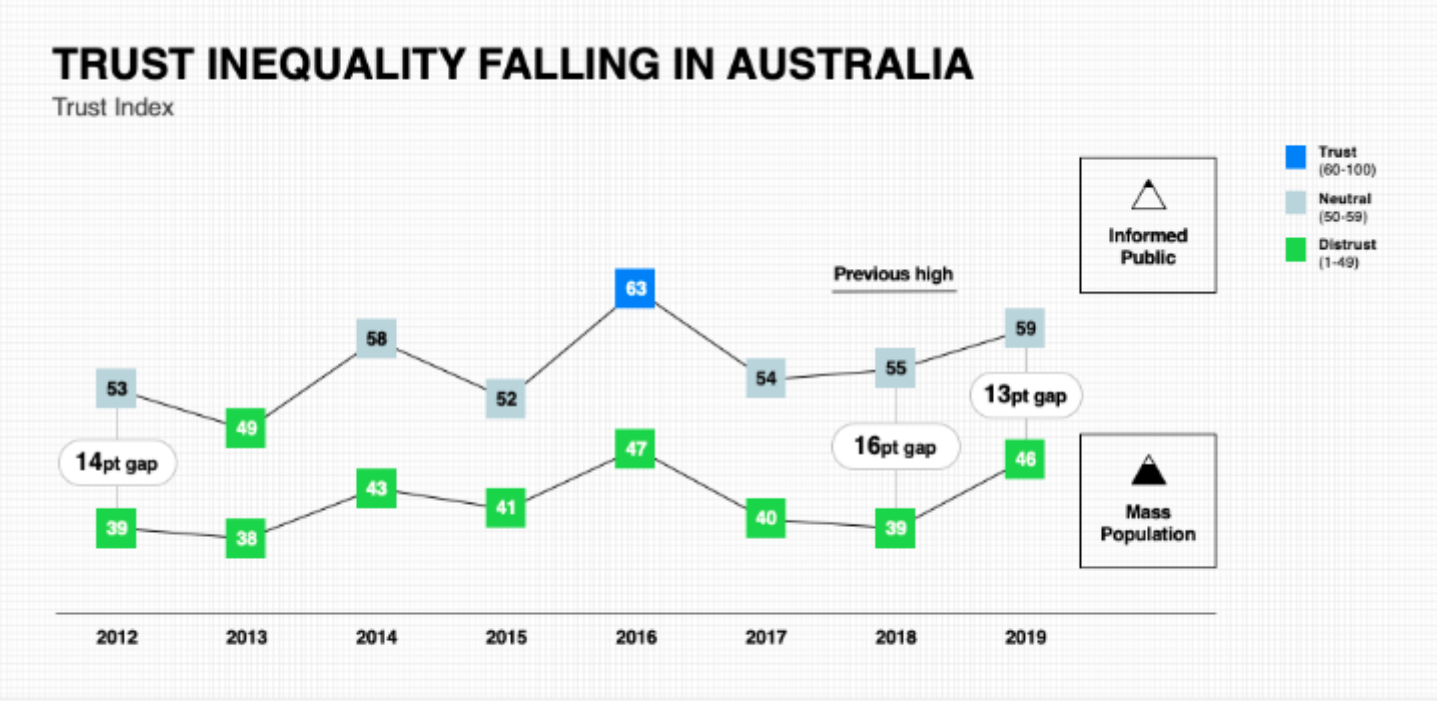
The Melbourne Institute and Westpac Bank Consumer Sentiment Index for Australia

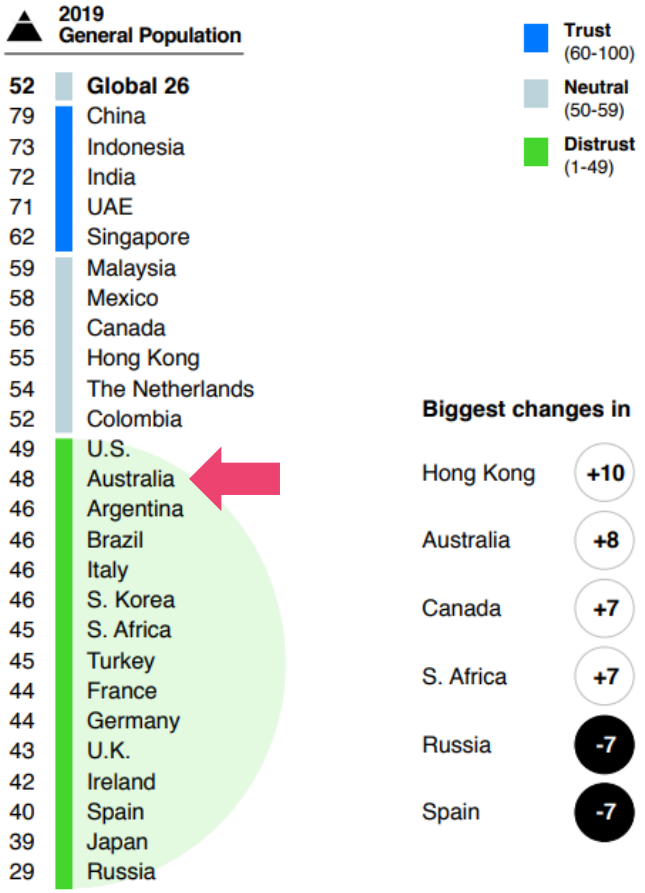


Consumer Sentiment Index: Standardised so that the average since 1980 is equal to 100.

Source: https://tradingeconomics.com/australia/consumer-confidence

Trust in organisations is fairly low in Australia compared to other countries, though it has been fairly steady over the past 7 years.

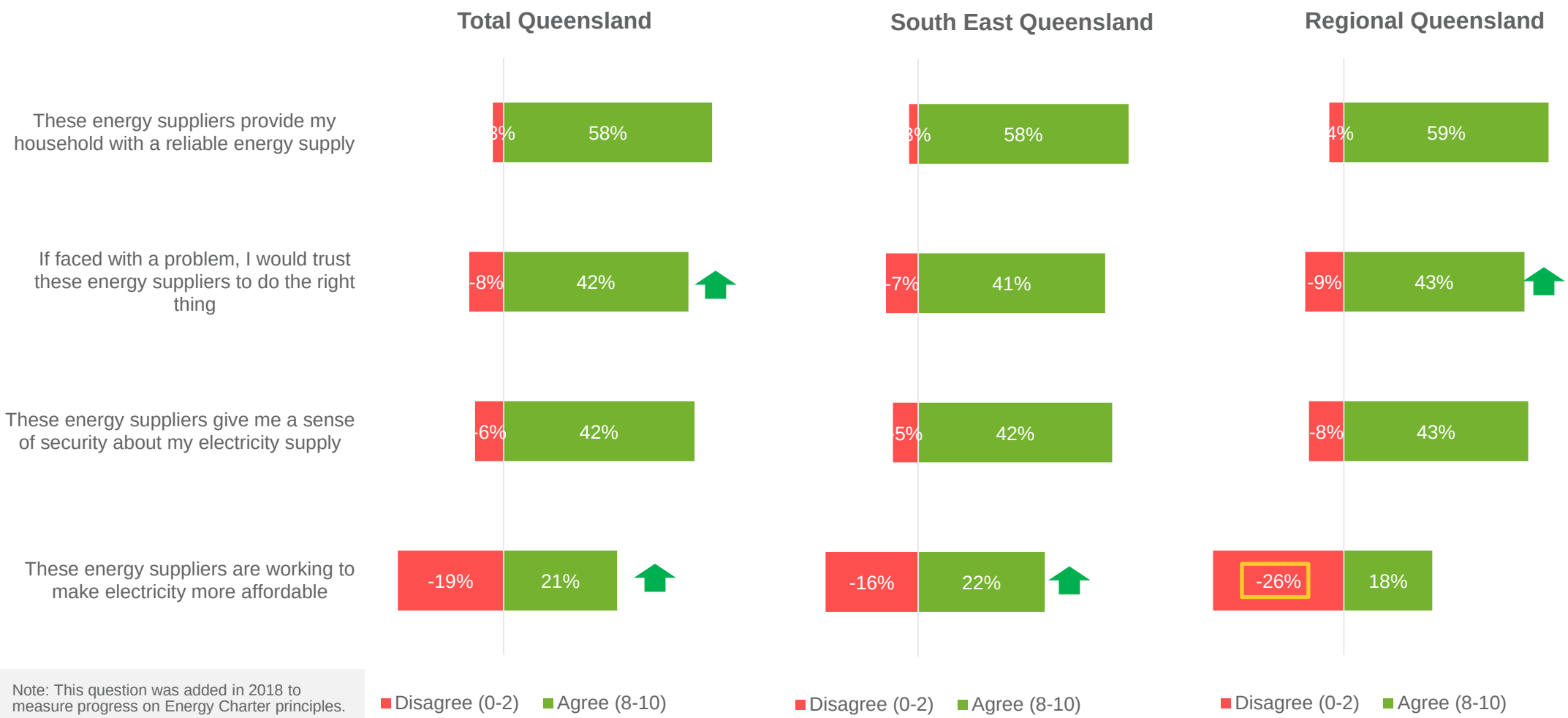




Source: https://www.edelman.com.au/research/trust-barometer-2019

And trust in energy suppliers is average among Queenslanders, except for low levels of trust in energy suppliers' efforts to make electricity more affordable.

Significantly higher/lower than 2018



Note: This question was added in 2018 to measure progress on Energy Charter principles.

I6. Please indicate on the scale below how much you agree with the following statements regarding Queensland's energy transmission and distribution providers (i.e. Powerlink, Ergon Energy and Energex).
Base: Total Sample

Significantly higher than Total Queensland

How have our appliances and energy systems changed?

A Look Back in Time.

1. The biggest change to our energy systems is the installation of Solar PV. This has increased 11 fold over the past 10 years and now 1 in 3 Queensland households (that is, all dwellings including apartments) have solar PV installed.
2. Inside our homes we have made some very big changes as new technology and ideas have developed.
    - LED bulbs have largely replaced the older energy efficient / compact fluorescent light bulbs.
    - Split systems and ducted air conditioning has effectively killed box air conditioners and electric space heaters.
    - Wall insulation is almost twice as prevalent.
3. We have changed our electronic appliances as new technology is released.
    - Tablets have gone from almost non-existent (the IPad was first released in 2010) to in 61% of homes.
    - LED technology in TVs has steadily replaced Plasma and LCD TVs.
    - Even laptops are more prevalent than in 2009, with desktops the losers.

Solar PV has increased 11 fold since 2009, while solar hot water has not changed.

2009

3%

Of all respondents have solar PV

2019

33%

Of all respondents have solar PV

B1A. Which of the following types of solar energy do you use in your home?
Base: Total Sample (n=4,536)

The prevalence of gas connections has not changed in 10 years. Wall insulation is now more prevalent, but the overall prevalence of insulation is only just higher.

2009

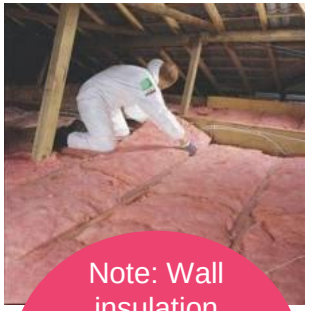
30%

Have gas connected

2019

32%

Have gas connected



Note: Wall insulation has increased from 13% to 22%

63%

Have & know about any form of insulation

65%

Have & know about any form of insulation

B1B. Which of the following types of gas energy do you use in your home?
B7. Where do you have insulation in your home? Select all that apply.
Base: Total Sample (n=4,536)

Queensland households have embraced LED light bulbs in the past 10 years while box air conditioners and electric space heaters are almost a thing of the past.

Increasing penetration

Washing Machine
94% ► 98%

Total Air Con
76% ► 84%

Split System
51% ► 62%

Ducted
6% ► 13%

Ceiling Fan
70% ► 78%

LED Lights
15% ► 54%
2010

Declining penetration

Electric Hot Water
69% ► 61%

Energy efficient / Compact fluorescent light bulbs
71% ► 46%

Stand Alone Freezer
51% ► 42%

Box Air Con
25% ► 14%

Electric Space Heater
39% ► 10%

E1. Which of the following do you have in your household? E1. Which type of hot water system do you have?
D1. Do you have any type of air conditioning in your home? D2. What type(s) of air conditioners do you own?
Base: Total Sample (n=4,536)

Over 10 years Queensland homes have seen the emergence of iPads, LED TVs, and smart speakers. While plasma TVs, desktops and stereos are endangered.

Increasing penetration

Laptop
65% ► 75%

Tablet
0% ► 61%

LED or LED/LCD TV
14% ► 53%
2011

Smart Speaker
0% ► 19%

Declining penetration

Plasma TV
26% ► 14%

Desktop Computer
78% ► 48%

Stereo
54% ► 37%
2013

E1. Which of the following do you have in your household?
Base: Total Sample (n=4,536)

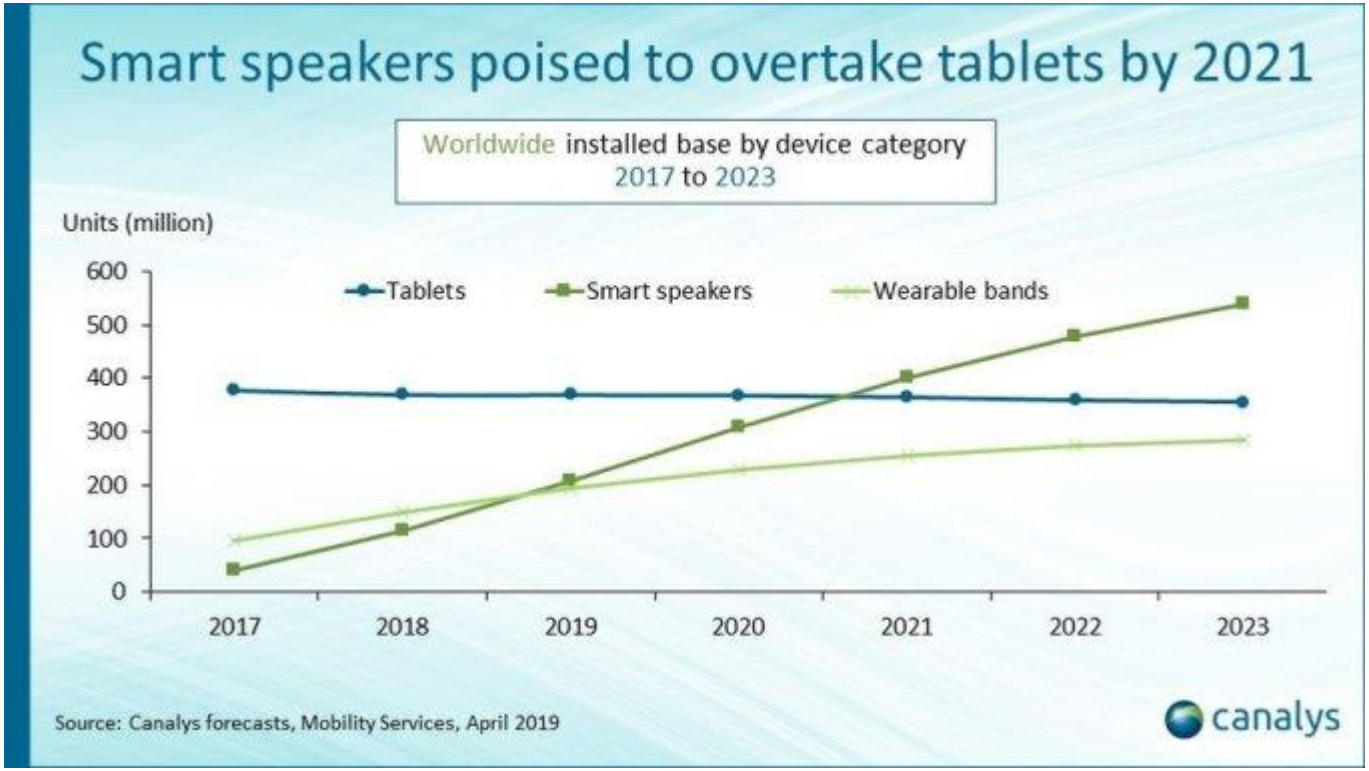
Smart Speakers will be the next big home technology globally (and in Australia).

Smart Speaker

0% ► 19%

Even though smart speakers are only at 19% penetration in Queensland, global trends suggest they will become just as prevalent (if not more) than tablets.

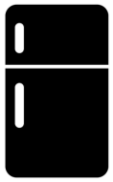
In the US, smart speaker penetration is already close to 30% and sales are predicted to grow by 46% next year.



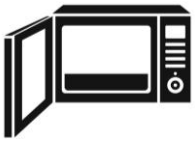
Source: Tech Crunch https://techcrunch.com/2019/04/15/smart-speakers-installed-base-to-top-200-million-by-year-end/

Penetration of fridges, microwaves, clothes dryers, and pools have not shifted over the 10 years.

Equal Penetration



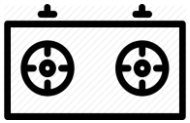
Fridge
96%



Microwave
93%

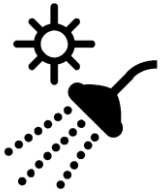
Electric Cook Top
66%
2018

Clothes Dryer
55%



Gas Cooktop
27%
2018

Pool
19%



Solar Hot Water
14%

B1A. Which of the following types of solar energy do you use in your home?
E1. Which of the following do you have in your household?
D1. Do you have any type of air conditioning in your home? E1. Which type of hot water system do you have?
Base: Total Sample (n=4,536)

How have our energy saving behaviours changed?

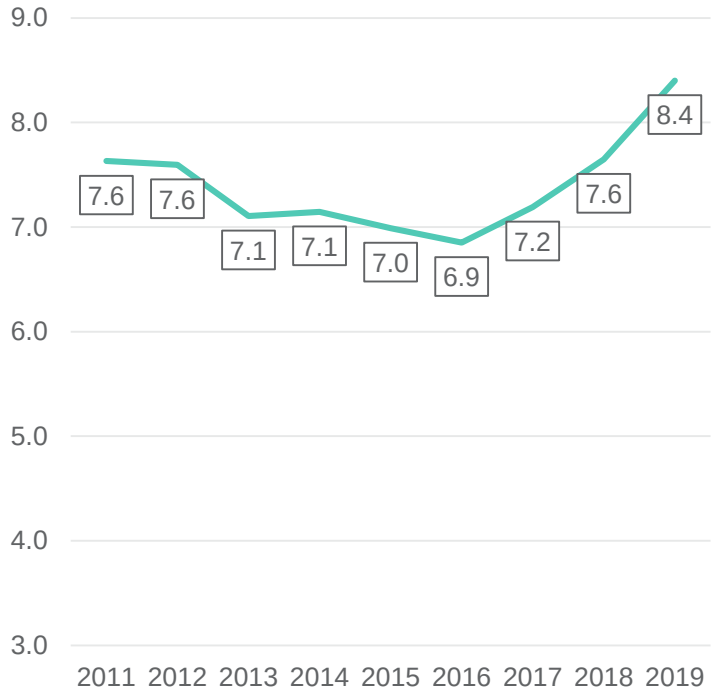
A Look Back in Time.

1. Individual day to day behaviour change routines to save more energy have not changed much in the last 10 years.
    - On average there are more energy saving behaviours being conducted (8.4 vs 7.6 back in 2011).
    - Yet Queenslanders efforts to actually reduce energy has faltered with only 3 in 4 now making efforts compared to 90% back in 2011.
    - The biggest change in these day to day behaviours is an increase in setting the air conditioning to 24 degrees (up from 43% in 2009 to 59% in 2019).
2. These individual behaviour changes are therefore quite small and have a low impact on attempts to save more energy.
3. We have seen already that the biggest change to our energy systems is the installation of solar PV. The increased penetration of solar PV has correlated very closely with the decline in attempts to reduce electricity usage.
    - QHES and other previous research has found that some customers who install solar PV become more energy conscious, even if it's only to shift their load so as to make more value of their system, while others use more electricity overall, reassured by the fact that some of that electricity is coming from the PV system.
    - While the reasons and motivations for behavioural change are varied, this data shows at the aggregate level that the increase in solar PV has led to a bigger shift in behaviour than any day to day behaviour change routine.
    - This matches new academic thinking* from Europe that shows across multiple energy saving initiatives, those that focus on individual motivation or education campaigns have lower influence on energy saving.
    - Future behaviour change efforts focussed on technology may therefore be more effective than motivational or education led efforts.

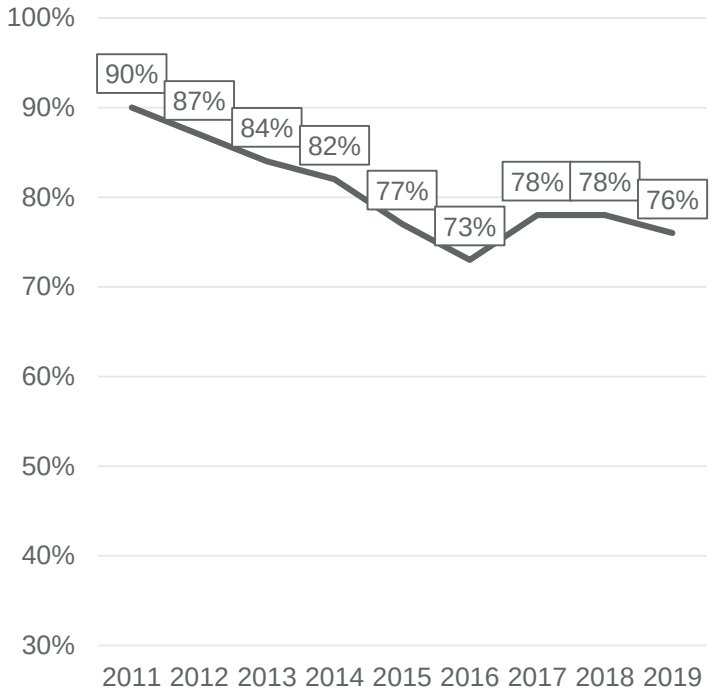
*The human factor: Classification of European community-based behaviour change initiatives. Axon et al. 2018

Queenslanders have embraced more energy efficient behaviours over the last decade, however attempts to reduce electricity use and a willingness to change time of use have declined.

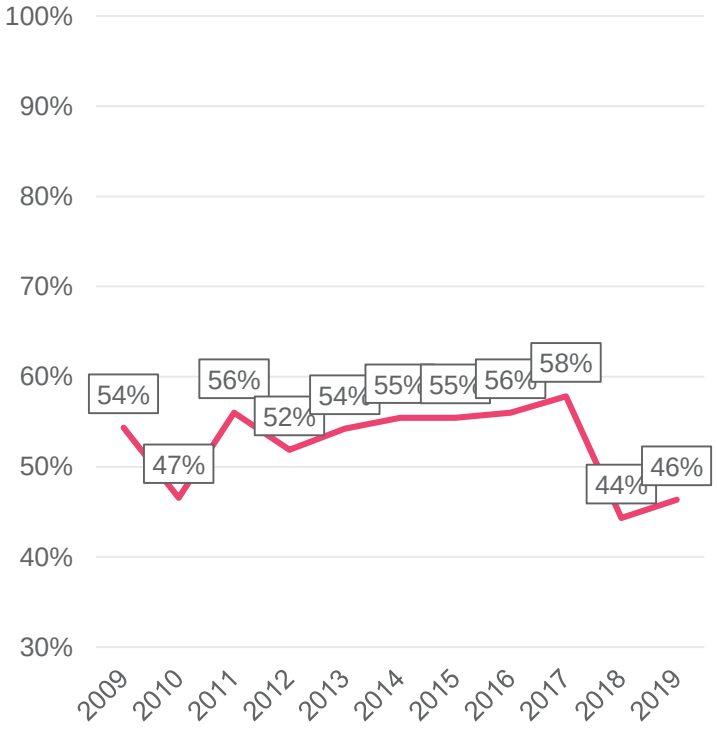
Average Number Of Energy Efficient Behaviours (Out Of 12 Possible Behaviours)



Attempted to Reduce Electricity Consumption From the Grid – Last 12 Months



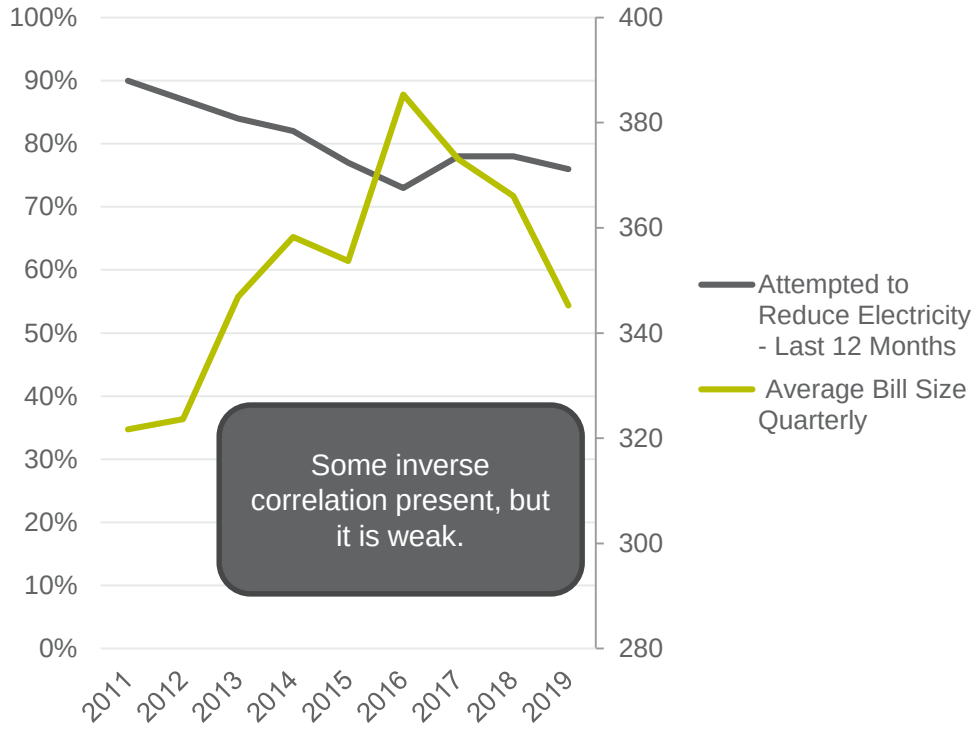
Willingness to Change Time of Appliance Use to Save Money



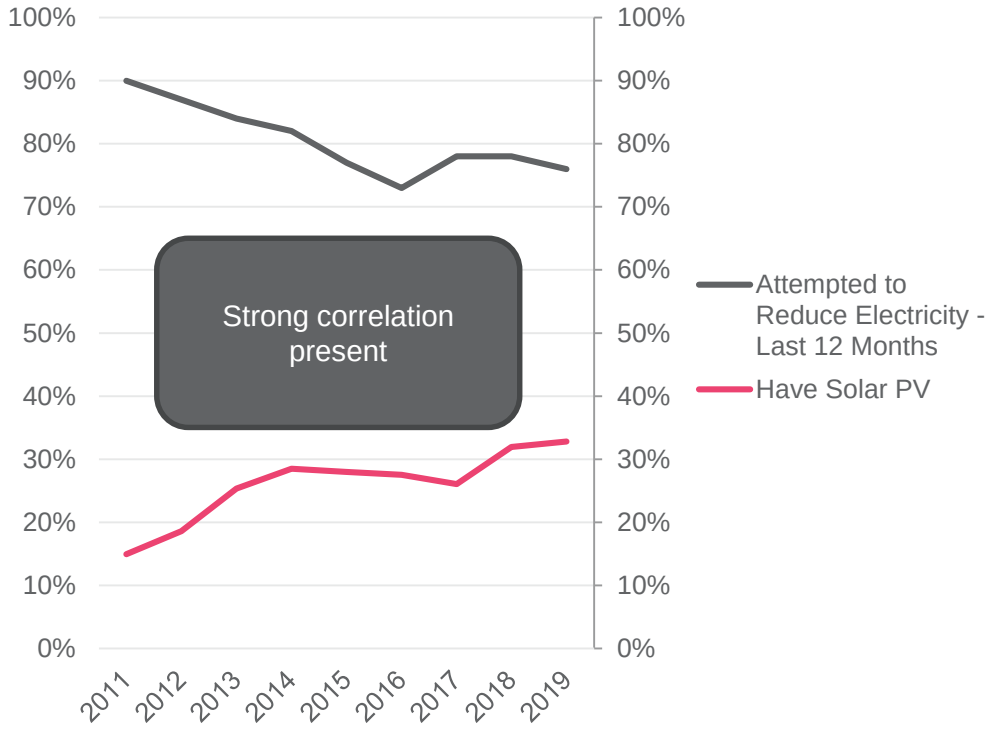
H1. The table below indicates some energy efficient behaviours. Please select the most relevant options per row:
H5. Have you consciously tried to reduce your electricity consumption (from the electricity grid) in the past 12 months?
H4. If you were able to save money on your electricity bill by changing the time of day you use your appliances, would you change when you use some of your appliances?
Base: Total Sample (n=4,536)

The decline in attempts to reduce electricity use appear to be highly related to the increased penetration of solar PV rather than to changes to price. As solar has increased over time, attempts to reduce electricity consumption have fallen.

Attempted to Reduce Electricity Vs Average Quarterly Bill

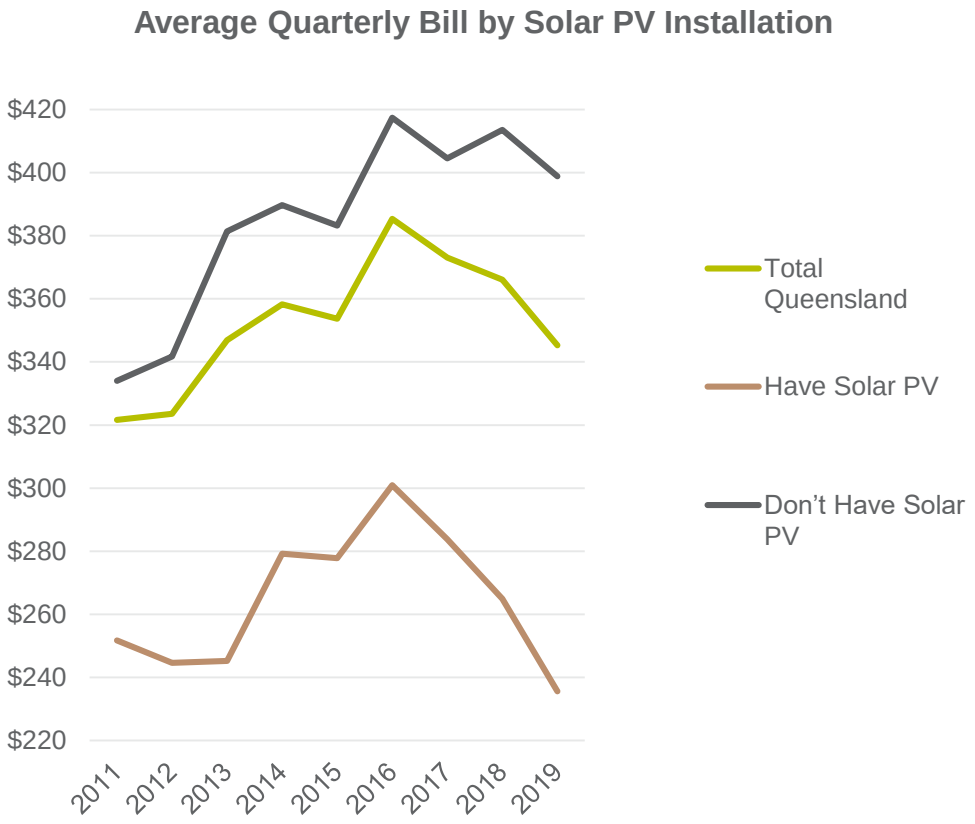


Attempted to Reduce Electricity Vs % Have Solar PV Installed



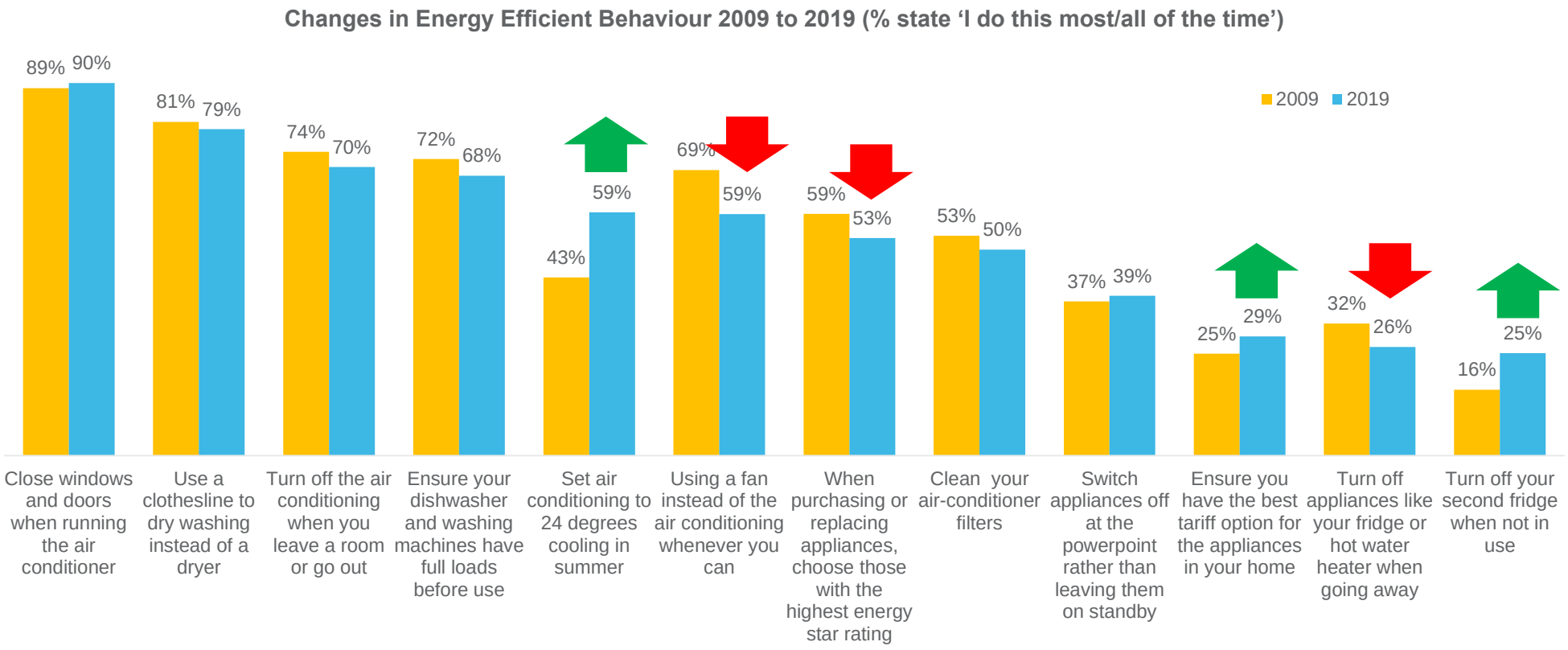
H5. Have you consciously tried to reduce your electricity consumption (from the electricity grid) in the past 12 months?
B1A. Which of the following types of solar energy do you use in your home?
A10. On average, how much is your electricity bill per fortnight/month/quarter? This is after any rebates you may receive.
Base: Total Sample (n=4,536)

This is most likely because it is those with solar that have significantly reduced their electricity bills in the past 4 years.



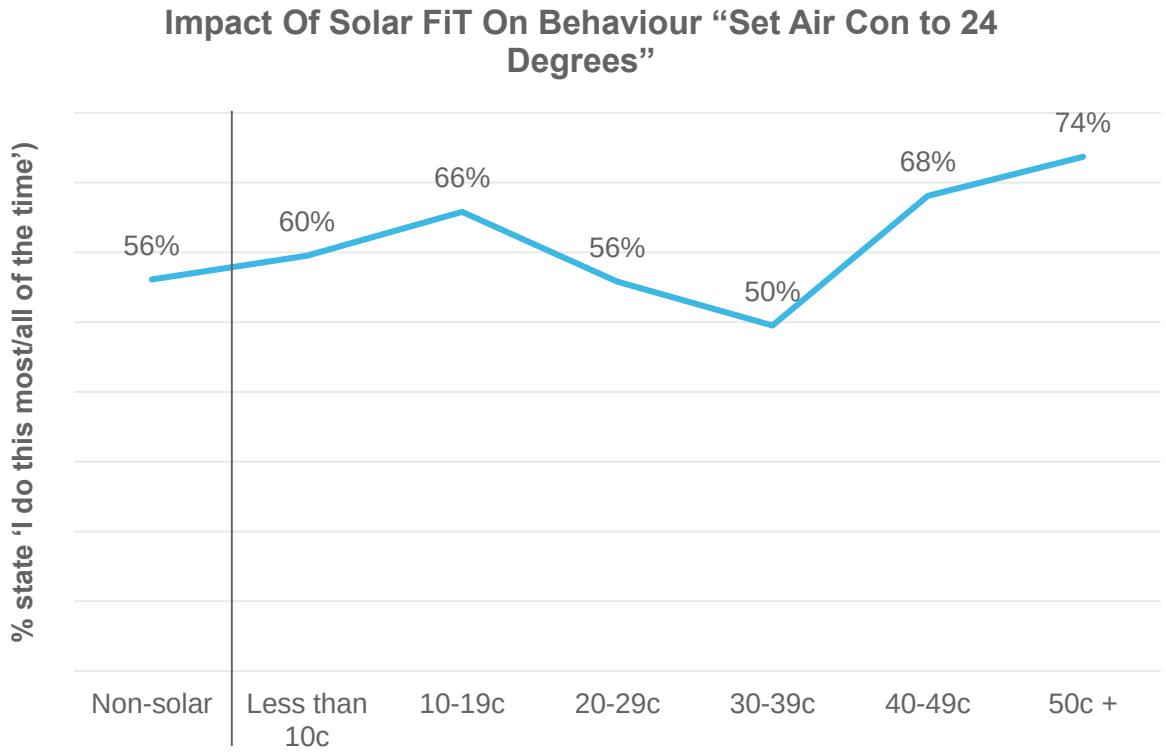
A10. On average, how much is your electricity bill per fortnight/month/quarter? This is after any rebates you may receive.
B1A. Which of the following types of solar energy do you use in your home?
Base: Total Sample (n=4,536)

Changes to individual energy efficient behaviours over the past decade have been small. The main change is Queenslanders are now more likely to set their AC to 24 and less likely to use a fan instead of AC.



H1. The table below indicates some energy efficient behaviours. Please select the most relevant options per row:
Base: Total Sample (n=4,536)

There is almost no difference in energy efficient behaviour between those with different levels of Feed in Tariff.



The only behaviour where there are statistically significant differences is setting the air-conditioning to 24 in summer.

And even for this behaviour, the differences are not huge.

Those on a high FiT are only a little more likely to try to set their air conditioner at 24C than those on a lower FiT.

H1. The table below indicates some energy efficient behaviours. Please select the most relevant options per row:
Base: Total Sample, 2017 to 2019 (minimum n=63)

Deep Dive 2:
The Future of Rooftop Solar.

Key Findings:
The Future of Rooftop Solar.

The big questions:

1. Does consumer intent limit the future growth of rooftop solar?

   No, future intent to install rooftop solar is strong, with 48% of all respondents stating that they will have or intend to have rooftop solar in the next 3 years.

   Of course not everyone will follow through with their intent, and it is likely that this will take 5 years or more.

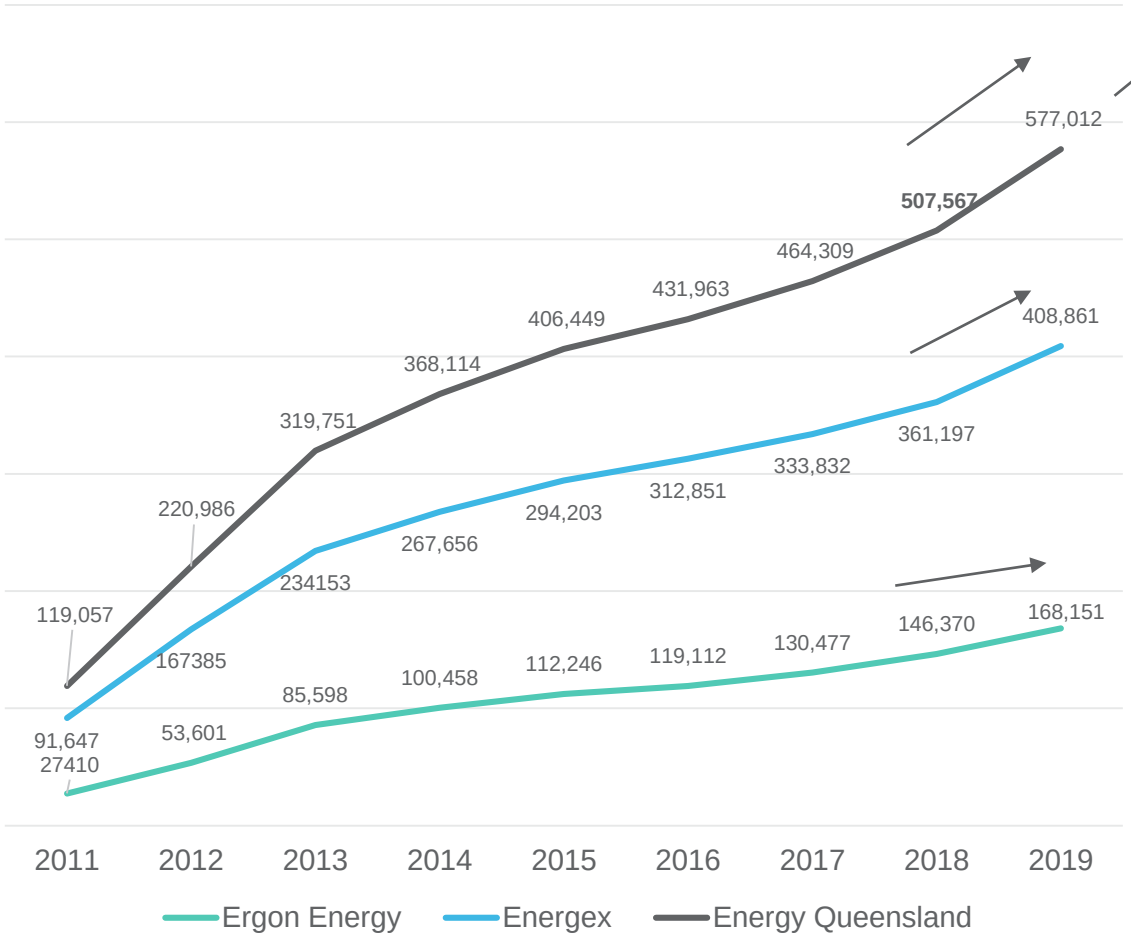
2. Is there a maximum 'headroom' for growth?

   Yes, and it is appears to be based primarily off ownership structure barriers (i.e. renters and owners that are part of a body corporate). The other barriers present are mainly centred around price, and it is likely that these barriers can be overcome in the future, even if it is the distant future.

   The maximum headroom we have calculated is 65% of all residential premises – detached houses, townhouses, units and apartments. This is still a long way off from the current 33% penetration and could take decades to reach.

The rate of solar PV installations increased in 2019, primarily in South East Queensland*.

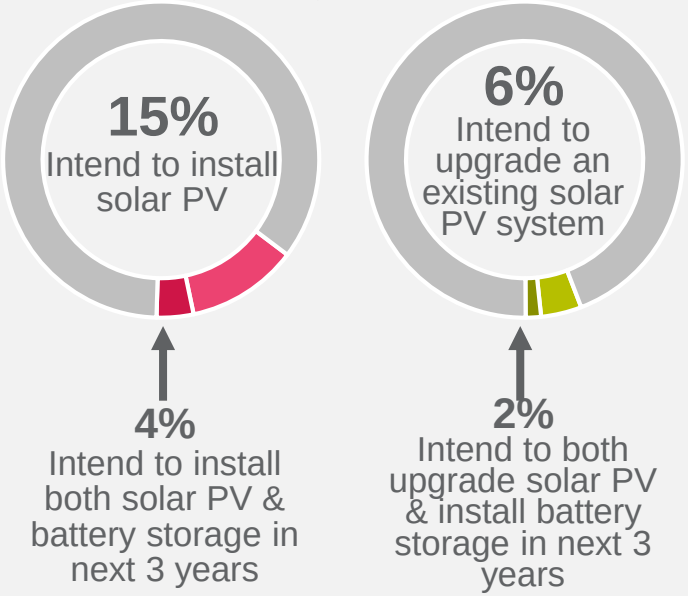
Number Of Solar PV Systems (All residential & business)
(Energy Queensland Internal Data)



The number of residential PV systems as at November 2019 was 545,210.

This equates to 28% of Queensland households* currently having a solar PV system installed (data provided by Energy Queensland)

Stated Intentions To Install Solar PV / Battery Storage In Next 3 Years

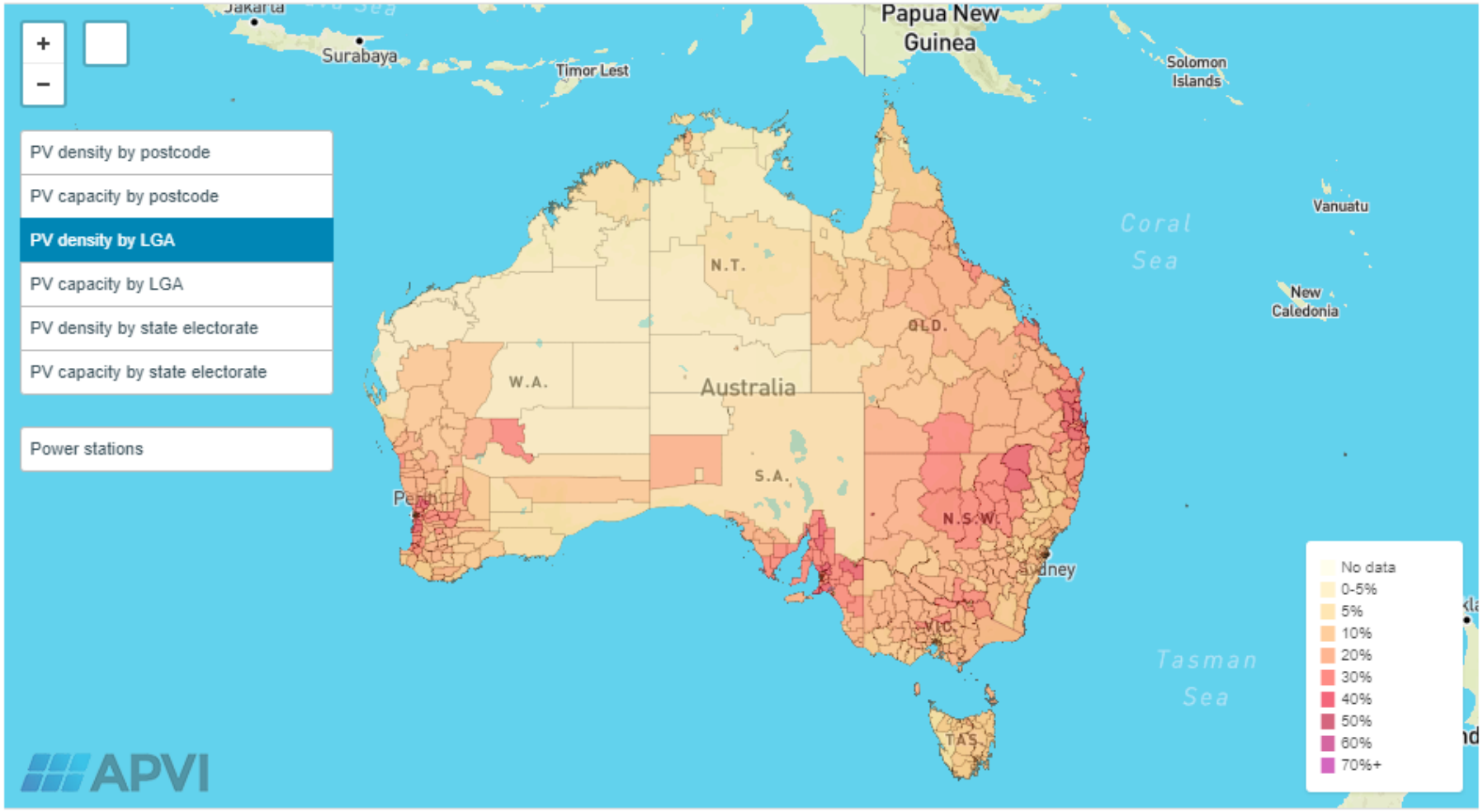


Note: Not all households will follow through with their stated intention to install / upgrade solar PV or battery storage. As a general rule, we conservatively estimate approximately one third (33%) will follow through with these intentions. Though this is subject many other factors, such as declining costs and Government / distributor policies, etc.

Energy Queensland Internal Solar PV Data
C10. WORDING 1: Do you intend to purchase additional or replacement solar panels (solar PV) for your home within the next 3 years?
C10. WORDING 2: Do you intend to purchase solar panels (solar PV) for your home within the next 3 years?
C22. Do you intend to purchase a battery storage system for your home?
Base: Total Sample (n=4,536)

* Households defined as all dwelling types, ABS series 2 projected data

Queensland has the highest rooftop solar penetration in Australia.



Source: APVI Solar Map. Note: Data from the Clean Energy Regulator is up to date as of 30 September 2019, however the number of systems installed may be understated due to the lag in system registrations

Based on householder* intent in the survey, penetration could increase to around 48% in the next 3 years. Even though it will likely take much longer for penetration to hit 48% due to intent not always resulting in purchase, this shows that consumer intent is not a limiter to future growth.

Percentage of all Households* (ABS)	Current Penetration (based on survey data)	Potential Additional Penetration in next 3 years (based on consumer intent)	Potential new penetration in 2022 (based on consumer intent)	Potential additional upgrades in next 3 years
 Houses: 77%	41%	17%	57%	7%
 Apartments: 11%	3%	12%	15%	0%
 Townhouses: 11%	11%	9%	21%	1%
 Other (caravans, boats, other): 1%	40%**	20%**	60%**	20%**
TOTAL: 100%	33%	15%	48%	6%

Those living in apartments have the greatest intent and penetration could increase to 15% if barriers are removed

Penetration has the potential to increase from 33% to around 48% though it is very likely to take longer than the 3 years stated by respondents. This also assumes that all intentions manifest in an installation which is unlikely. This figure is therefore the maximum potential.

* Households defined as all dwelling types
** Very low sample size, proportions are not representative of population (n=22)

C10. WORDING 1: Do you intend to purchase additional or replacement solar panels (solar PV) for your home within the next 3 years?
C10. WORDING 2: Do you intend to purchase solar panels (solar PV) for your home within the next 3 years?
Base: Total Sample (n=4,536)

Maximum headroom for rooftop solar will be limited by household ownership issues.

Barriers to Taking up Rooftop Solar

	% of household without solar not intending to take up solar	% of all households
We are renting so it is not appropriate	53%	30%
The costs involved with purchasing it	21%	12%
The return on investment - the solar PV payback takes too long	11%	6%
Live under Body Corporate restrictions	9%	5%
Because the Queensland Solar Bonus Scheme feed-in tariff has dropped from 44 cents to a lower rate	9%	5%
I'm not sure how long I will be staying in my home / I am planning to move homes	7%	4%

These 2 ownership structure barriers are the biggest stated barriers.

35% of all household have one of these ownership barriers.

We assume that anyone with this barrier will not take up rooftop solar in the future, and this can therefore be where we set the maximum headroom (of course policy and structural issues could change this).

C13. Why are you not currently considering solar panels / solar PV for your home? Base: Do not have or intend to uptake solar PV (n=2,349)

Maximum headroom for rooftop solar with no time limit applied is about 65% of all households.

	Percentage of all Households (ABS)	New penetration in 2022 (based on intent)	% of all households with ownership barrier	MAXIMUM HEADROOM FOR SOLAR
	Houses: 77%	57%	22%	78%
	Apartments: 11%	15%	81%	19%
	Townhouses: 11%	21%	65%	35%
	Other (caravans, boats, other): 1%	60%**	45%	55%
	TOTAL: 100%	48%	35%	65%

Penetration in 5 years is likely to be 48%

Maximum penetration (no time limit) is likely to be 65%, unless ownership barriers are addressed

C13. Why are you not currently considering solar panels / solar PV for your home? Base: Do not have or intend to uptake solar PV (n=2,349)

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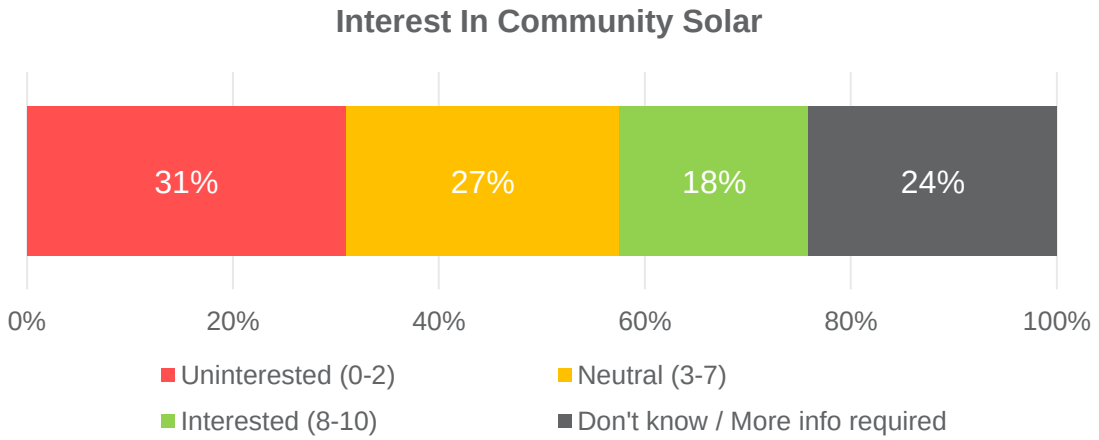
The concept of community solar is still not widely known or understood, and interest is lower than 2 years ago.

22%
are aware the concept of community solar PV
(21% in 2018)



Description Of Community Solar Included In Survey
'Community solar' is a term describing one or more solar power systems owned or leased by a group within a community, rather than an individual household. This 'community' may refer to your building complex, your local neighbourhood or a group of investors. Members of the community may contribute an initial investment to the solar power system(s) and share in the subsequent benefits this provides. The project may or may not include a battery storage system (for excess solar power).

Interested (8-10): 23% in 2017 & 20% in 2018

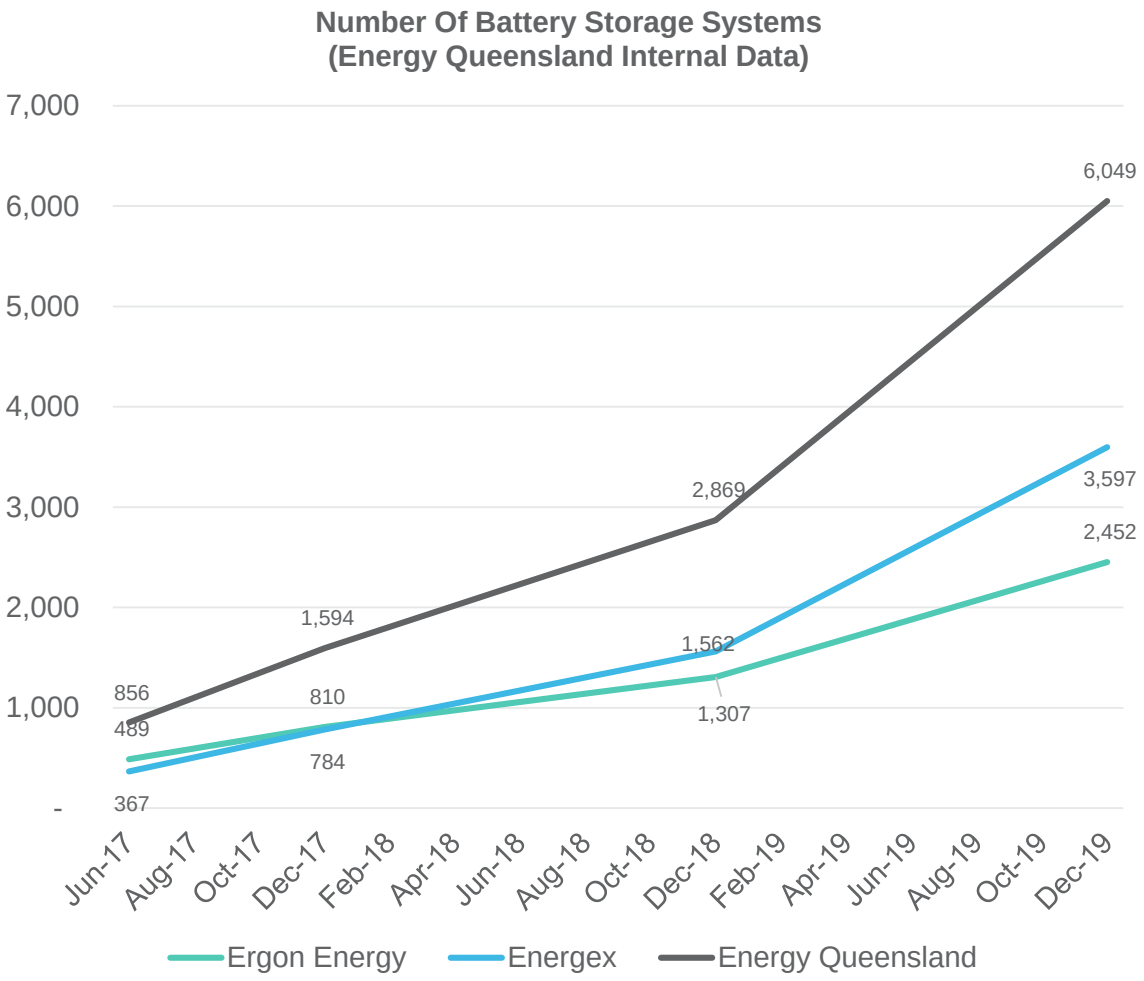
C4. Are you aware of the concept - 'community solar'?
C5. How interested is your household in being involved in 'community solar'? This may involve your household providing some kind of contribution to this solar power system and sharing in the subsequent benefits this provides.
Base: Total Sample

Deep Dive 3:
Batteries & Off-Grid.

Key Findings:
Batteries & Off-Grid.

1. Installations of battery storage systems have begun to accelerate in Queensland, despite still having very low penetration at 0.3%.
2. Over the next ten years, 28% of Queensland households have the intention to install battery storage.
3. Outback Queenslanders have the highest overall intent to purchase a battery system, though most are looking at a 3-10 year timeframe.
4. Intent to purchase a battery system in the next 3 years has fallen this year in regional Queensland, driven by an increased perception that battery systems may not last long enough to reap a return on the investment. Many regional Queenslanders are looking to install in the next 10 years though.
5. This is in contrast to an increased perception and reality that battery systems are becoming cheaper.
    - The average battery system now costs $8.6k, down $9.3k in 2018.
    - The first system to achieve the ideal balance between cost (less than $10k) and capacity (13kWh) has now been released.
    - It will therefore not take too long before many suitable systems cost approximately $10,000, and the tipping point begins to be reached.

The number of battery storage systems installed in Queensland has more than doubled over the past 12 months.

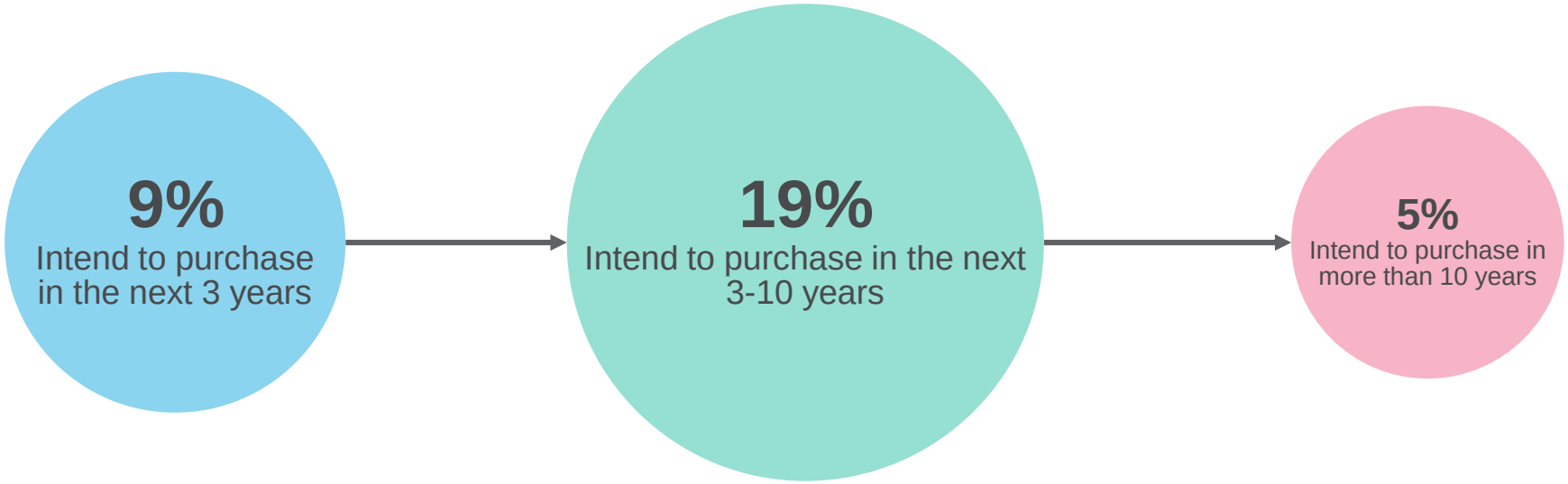


0.3% of Queensland households currently have a battery storage system installed

In 2019, an average of **170 battery storage systems** were connected each month in South East Queensland (this was 65 in 2018).

In regional Queensland, an average of **95 battery storage systems** were connected each month (this was 41 in 2018).

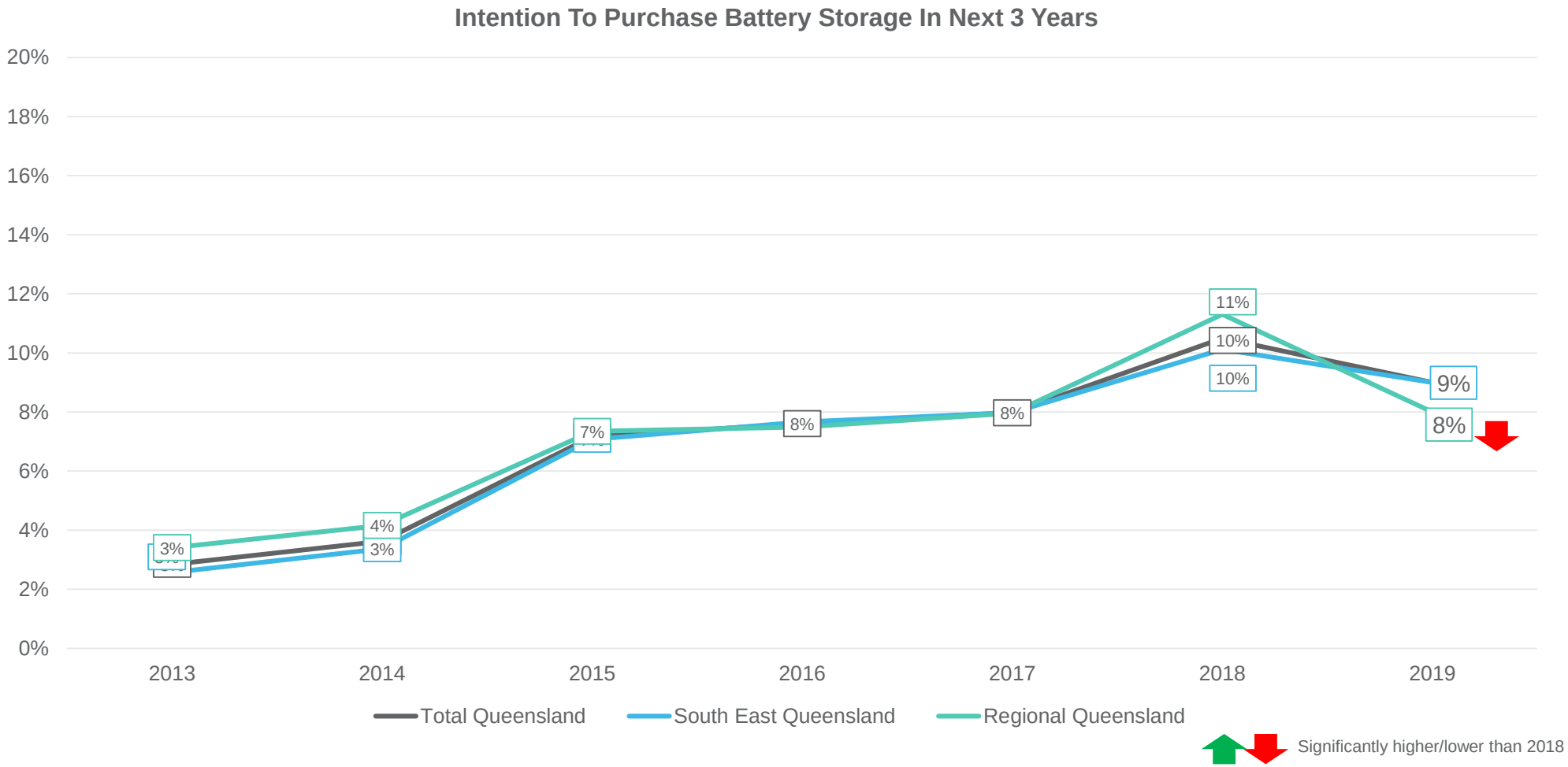
Almost one in three Queensland households intend to install battery storage in the next 10 years (28%).



Note: There is no significant shift from 2018 where 30% of households intended to install battery storage.

C22. Do you intend to purchase a battery storage system for your home?
Base: Total Sample (n=4,536)

Intention to purchase battery storage in the next 3 years has dropped significantly in Regional Queensland.



C22. Do you intend to purchase a battery storage system for your home?
Base: Total Sample (n=4,536)

Note: Not all households will follow through with their stated intention to install battery storage. As a general rule, we conservatively estimate approximately one third (33%) will follow through with these intentions. Though this is subject many other factors, such as declining costs and Government / distributor policies, etc.

The drop in intention to purchase battery storage in Regional Queensland is due to stronger concerns about the long-term ROI of battery storage.

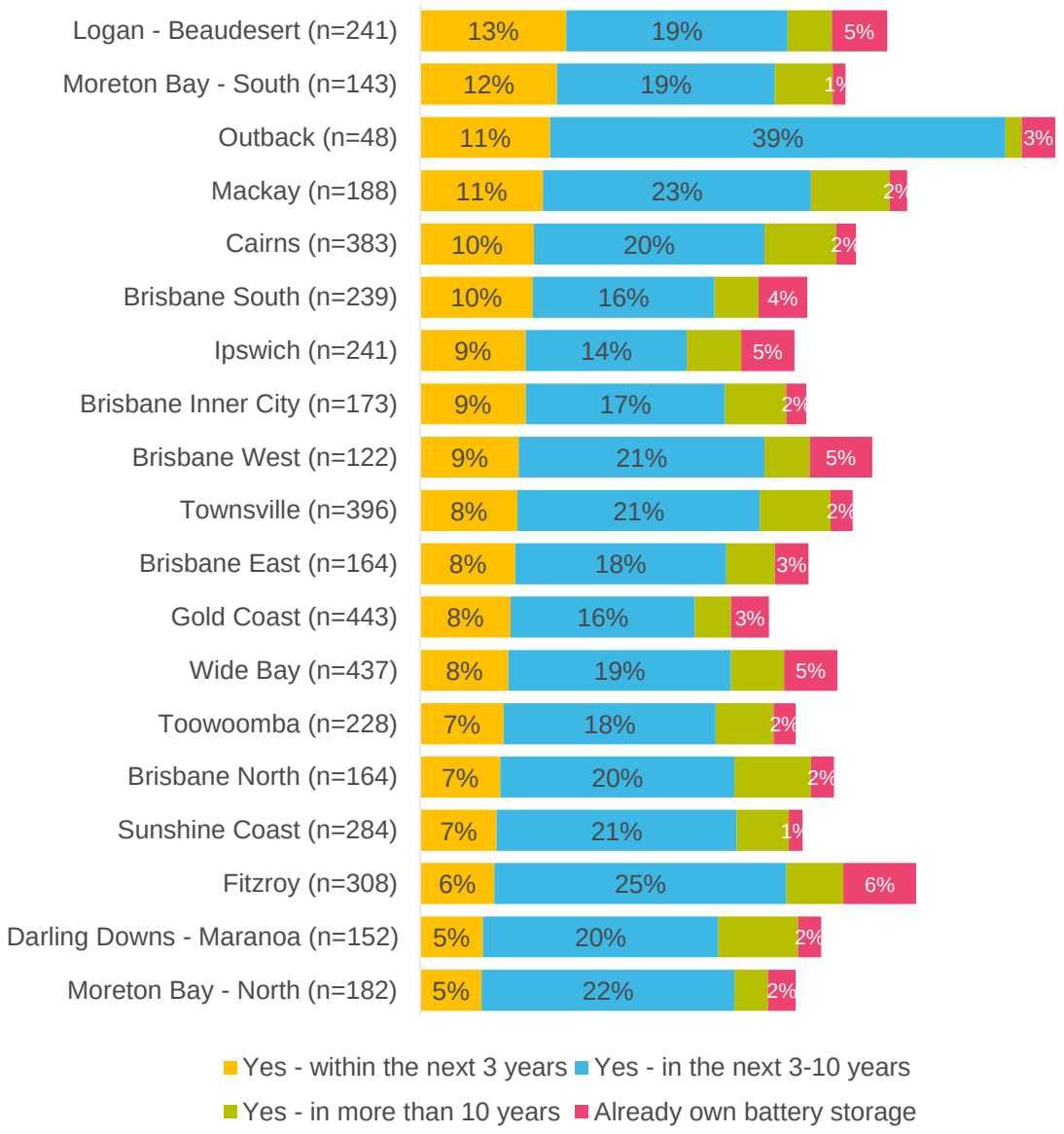
Barriers to Purchasing	Total Queensland	South East Queensland	Regional Queensland
n=	4,050	1,477	2,573
We are renting so it is not appropriate	35%	36%	33%
Doesn't make financial sense / too expensive/ long return on investment	26%	25%	27% ↑
I don't know enough about it	25%	25%	25%
I am waiting for the technology to improve	18%	16%	19%
I have concerns about how long a battery storage system will last	16%	15%	17% ↑
There are no Government incentives or rebates to purchase	14%	14%	15%
It is too difficult or expensive to maintain a battery storage system	12%	12%	12%
I'm not sure how long I will be staying in my home / I am planning to move homes	11%	12%	11%
I have concerns about the safety of a battery storage system	8%	8%	7%
Manufacture and disposal of battery storage systems would have environmental consequences	5%	4%	5%
I could lose my Solar Bonus Scheme payments	4%	4%	4%
System is too large or unattractive / nowhere to put it	4%	4%	5%
Unable in a unit/ apartment/ body corporate	2%	1%	2%

↑↓ Significantly higher/lower than 2018

C26. For which reasons do you not intend to purchase battery storage for your home in the next 3 years ?
Base: Do Not Intend to Purchase a Battery Storage System in Next 3 Years

Households in Logan and Moreton Bay South show the greatest interest in installing new battery storage systems over the next three years.

Intention To Install New Battery Storage In The Next Three Years



Note: Not all households will follow through with their stated intention to install battery storage. As a general rule, we conservatively estimate approximately one third (33%) will follow through with these intentions. Though this is subject many other factors, such as declining costs and Government / distributor policies, etc.

C22. Do you intend to purchase a battery storage system for your home?
Base: Total Sample

Those intending to install battery storage generally have solar PV already. Those looking to install batteries in the next 3 years are also more likely to look at fully going off-grid in the next 3 years.

9%
Intend to purchase in the next 3 years

- Generally, have solar PV installed
- But have not experienced change in bill size
- More likely to want to go fully off-grid in the next 3 years

19%
Intend to purchase in the next 3-10 years

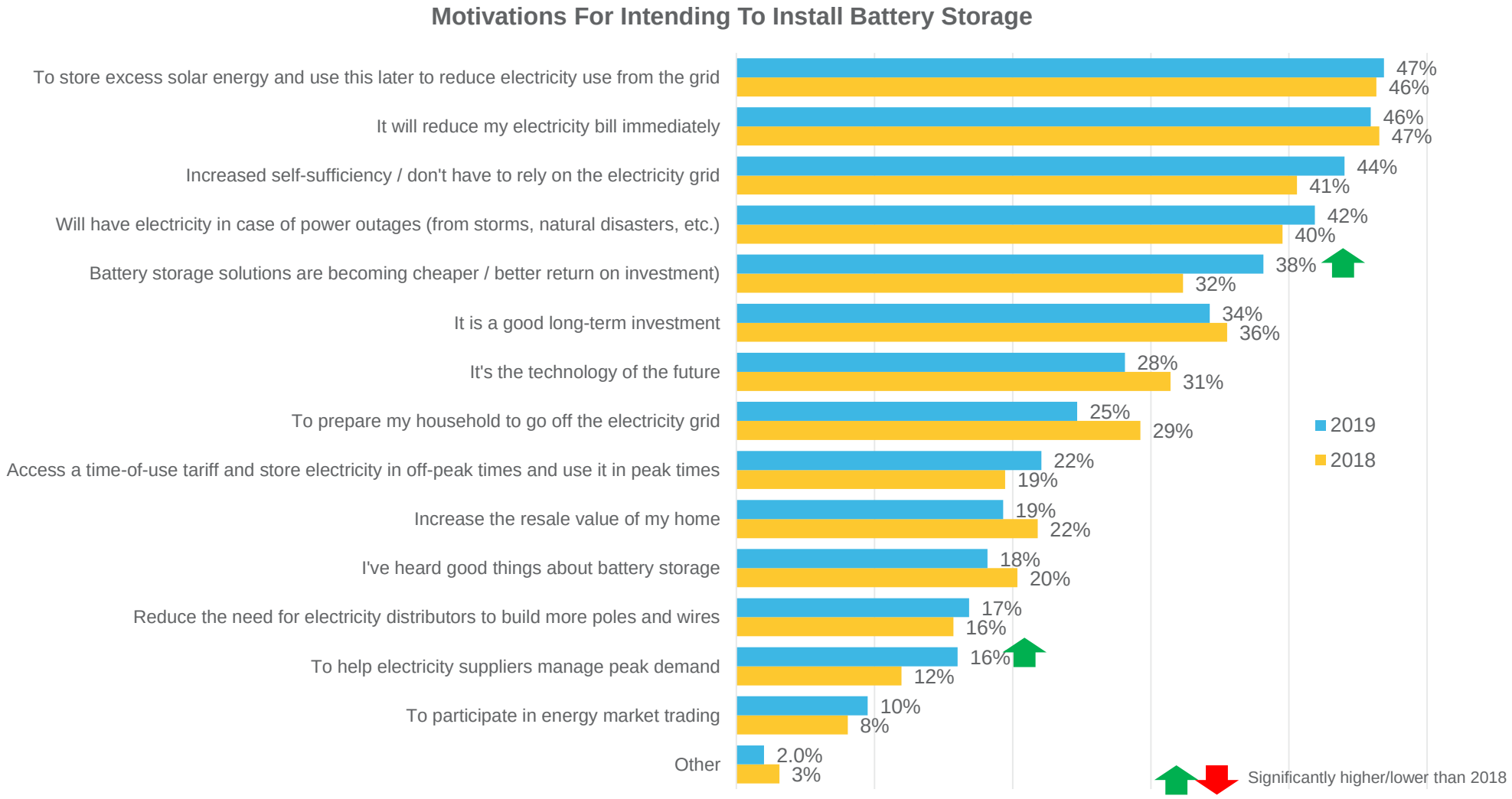
- Generally, have solar PV installed
- Have lowered their bill size
- Looking at going off-grid, but likely in more than 3 years

5%
Intend to purchase in more than 10 years

- Generally, have solar PV installed
- Have lowered their bill size
- Less likely to want to go fully off-grid

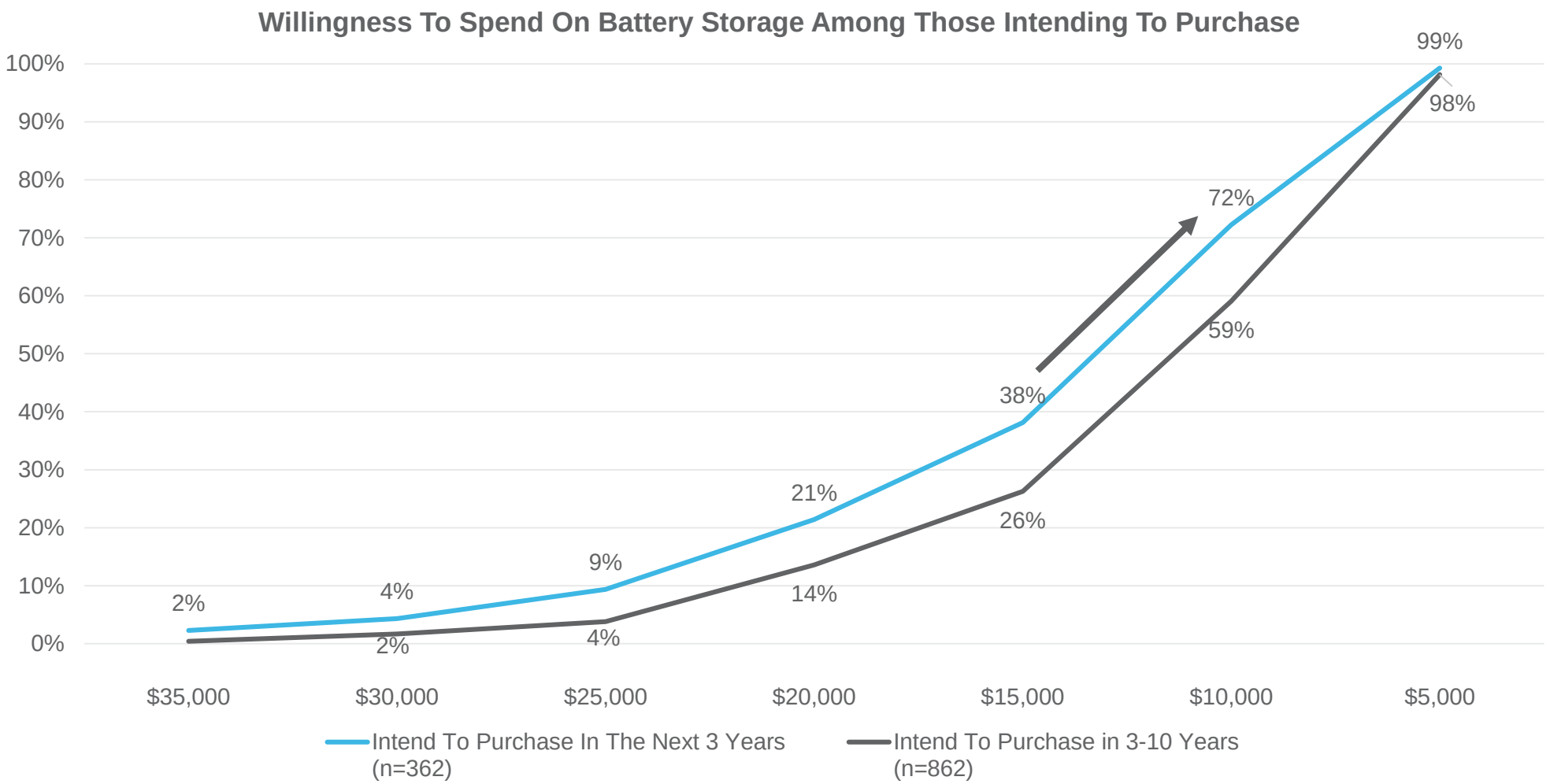
C22. Do you intend to purchase a battery storage system for your home?
Base: Intend to Install Battery Storage (n=1,431)

Reducing bill sizes and storage for later usage are the primary motivations for installing battery storage, and the declining cost of solutions is a growing motivation.



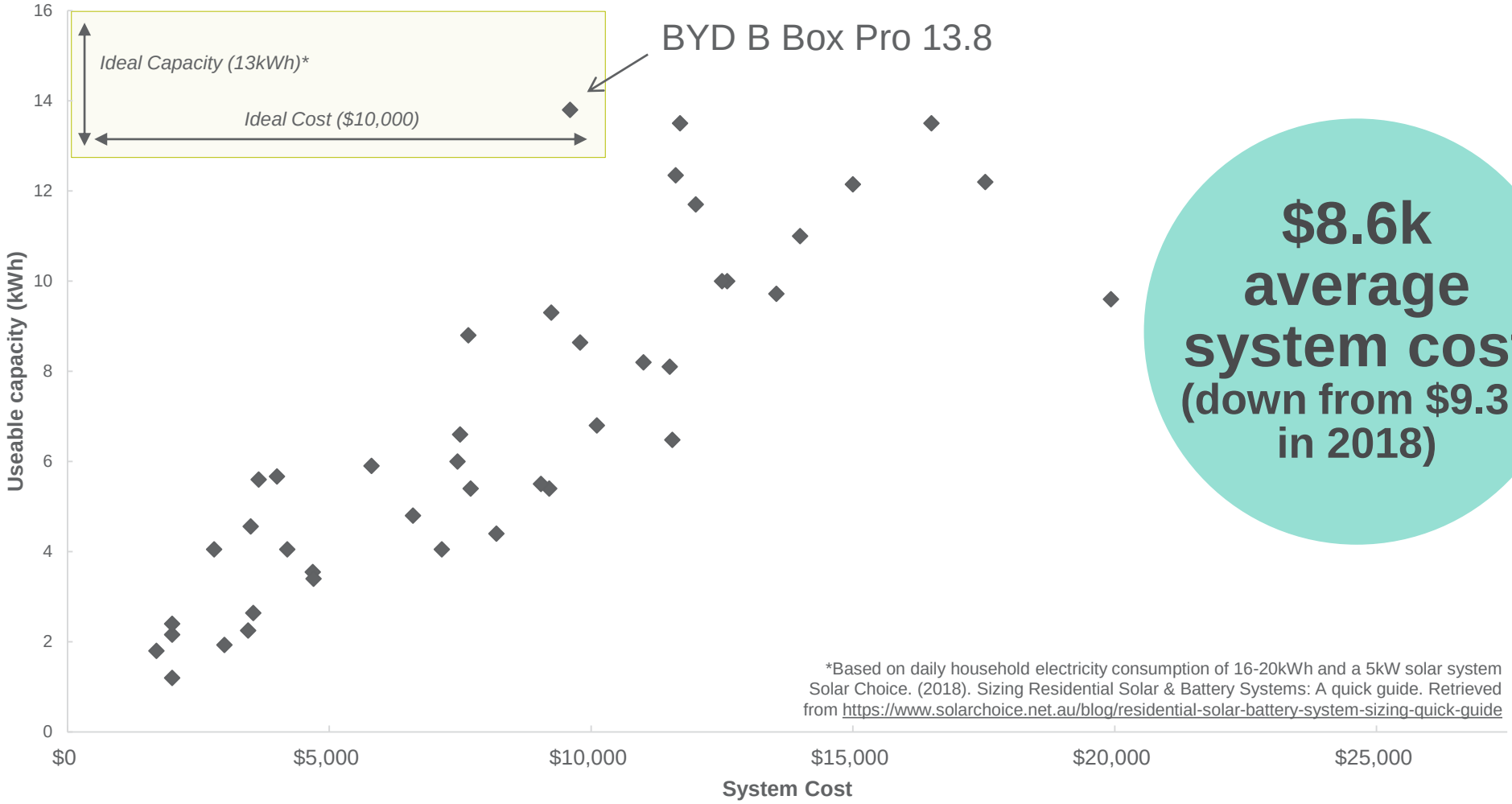
C23. WORDING 2: Why are you considering purchasing battery storage for your home?
Base: Those intending to install battery storage

A sharp increase in uptake of battery storage is expected when suitable systems cost approximately $10,000.



C24. Approximately, what is the maximum you would be willing to spend on a home battery storage system?
Base: Those intending to install battery storage

Battery storage has now achieved the ideal balance between cost and capacity – one model in 2019 now does this. This is because the average cost in coming down rather than the size of the systems increasing.



$8.6k average system cost (down from $9.3k in 2018)

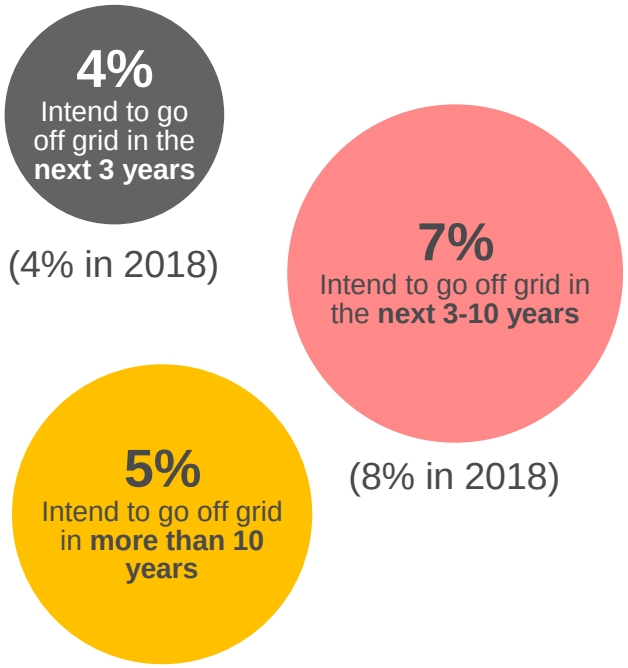
*Based on daily household electricity consumption of 16-20kWh and a 5kW solar system
Solar Choice. (2018). Sizing Residential Solar & Battery Systems: A quick guide. Retrieved from https://www.solarchoice.net.au/blog/residential-solar-battery-system-sizing-quick-guide

SolarQuotes. (2019). Solar Battery Storage Comparison Table. Retrieved from https://www.solarquotes.com.au/battery-storage/comparison-table/

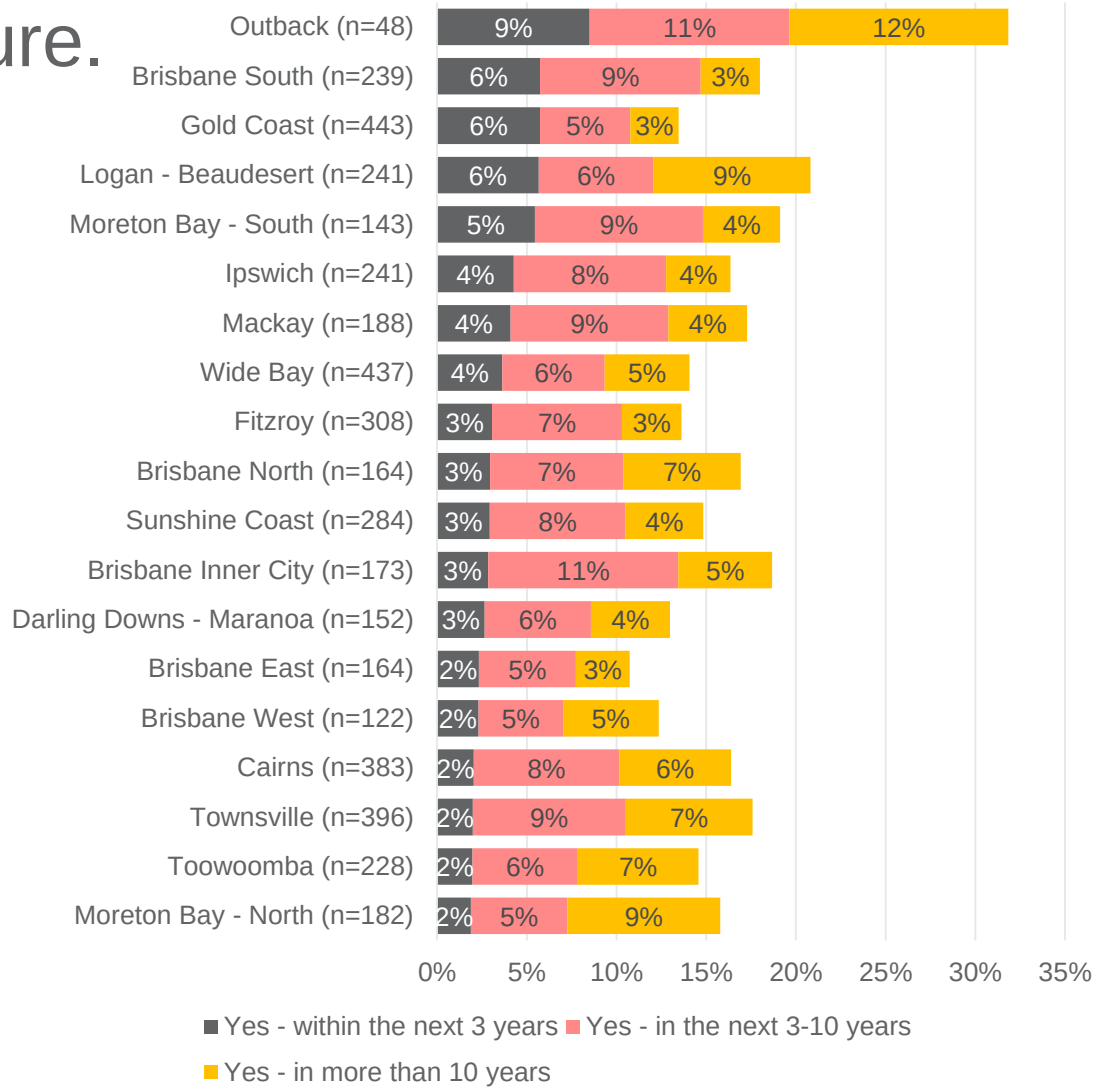
Outback householders are more likely to intend to go off grid at some time in the future.

Note: This is an intent score, and based on 48 random Outback householders only. However a similar pattern among outback householders was also seen in the 2018 QHES survey.

Intention To Go Off Grid
Total Queensland

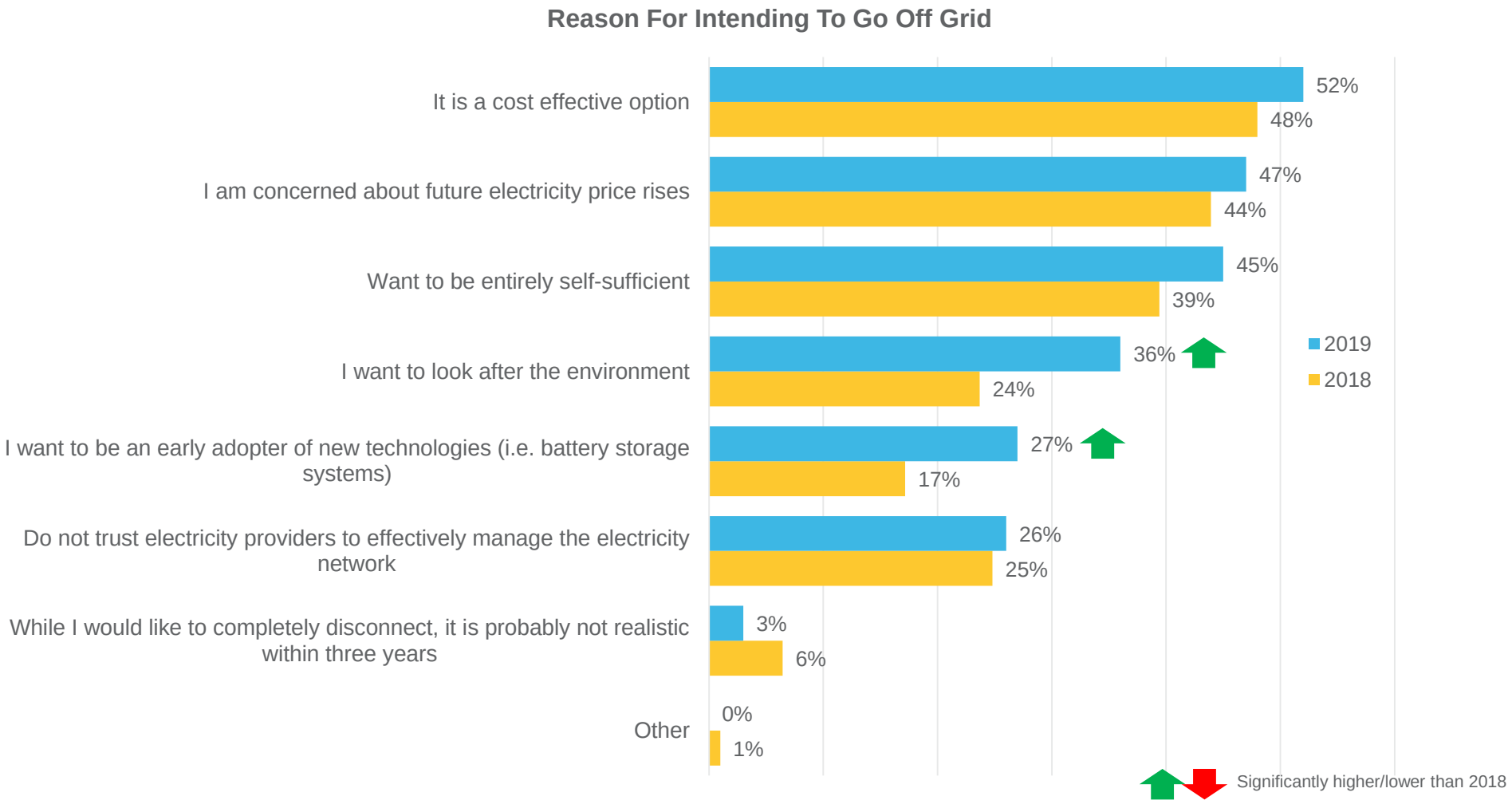


Intention To Go Off Grid



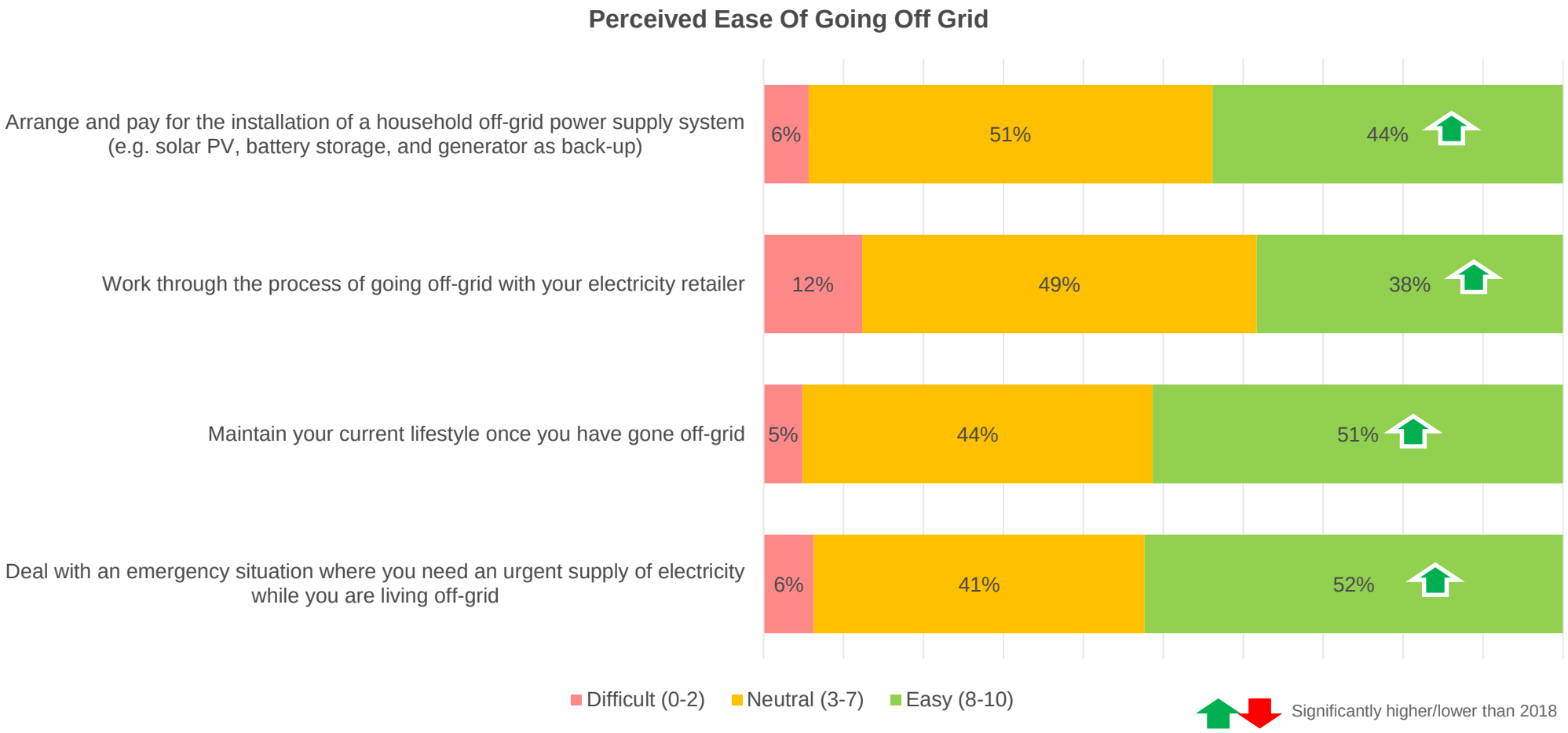
C27. Do you intend to completely disconnect from the electricity grid? By doing this you would have no access to electricity supplied by Energex (SHOW IF REGION = SEQ) Ergon Energy (SHOW IF REGION = REGIONAL QLD) and you would be responsible for generating 100% of your household's electricity.
Base: Total Sample

Those intending to go off grid are more strongly motivated by environmental reasons in 2019 vs 2018.



C28. And why do you intend on completely disconnecting from the electricity grid?
Base: Those intending to go off grid in the next 3 years (n=142)

Among those who state they intend to go off grid in the next 3 years, it is considered even easier to do so than in 2018.



C30. The following questions are about the concept of disconnecting from the electricity grid completely and being 100% responsible for the generation of your own electricity. This is colloquially known as going 'off-grid'.

Using a scale from 0 to 10, how difficult or easy do you think it would be to…
Base: Those intending to go off grid in the next 3 years (n=182)

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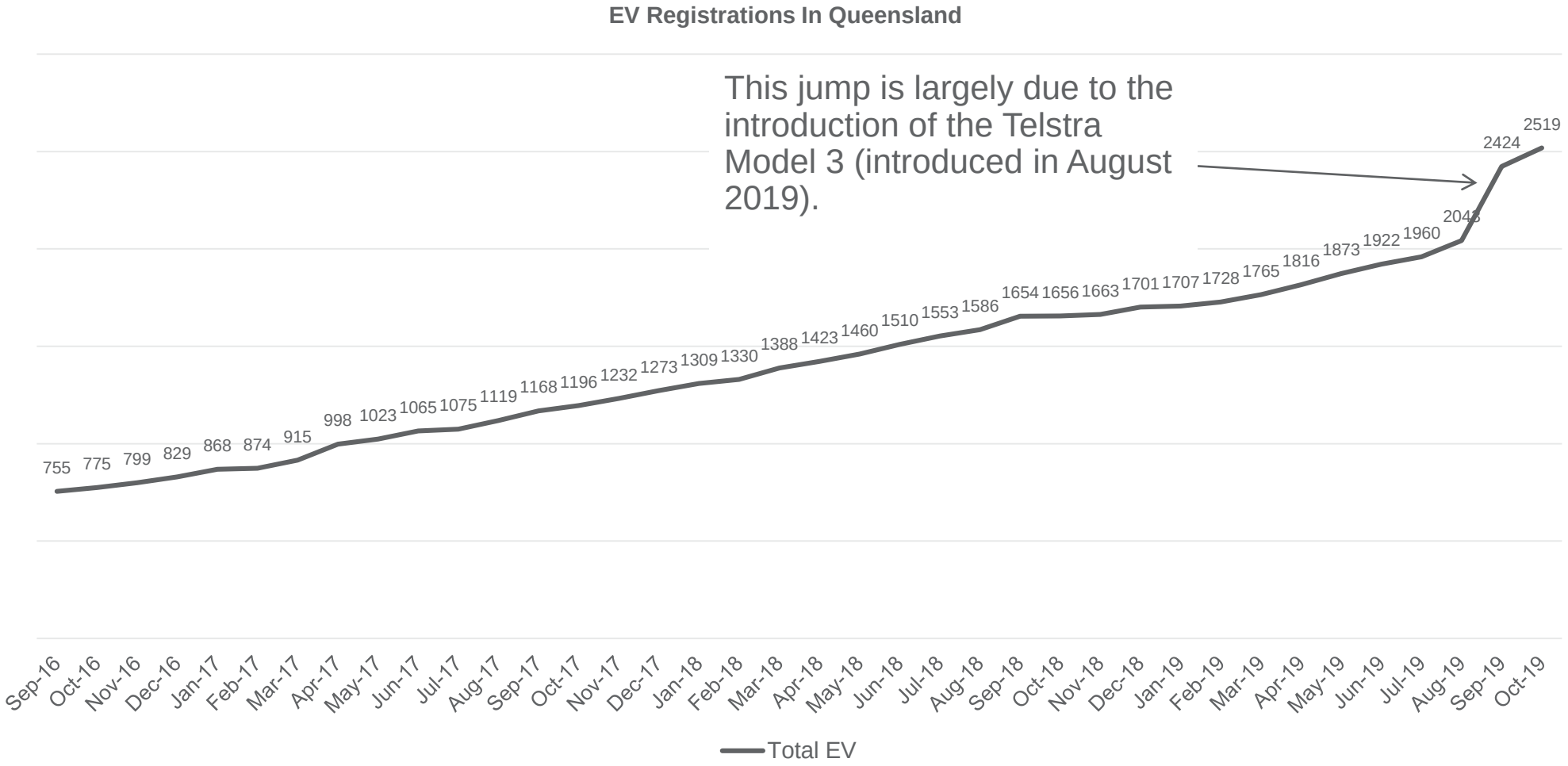
Deep Dive 4:
Electric Vehicles.

Key Findings:
Electric Vehicles.

1. Electric vehicle registrations have seen a jump towards the end of 2019 following the introduction of the Tesla Model 3. This shows that a price closer to mainstream coupled with a range that more closely meets needs (450km) can have an impact on penetration of EVs.
2. Price appears to still be a big barrier for many Queenslanders. It looks as though the perceived high price of EVs stops many people even considering EVs as an option. A hypothetical price of $20,000 as tested last year shows that consideration for EVs would be very strong at this lower price points. This is likely because a considerable portion of the current car market is between $20k and $30k.
3. Those who already own EVs are very likely to charge the car at home, with 83% stating they almost always charge from home.

The number of EV's registered in Queensland started to accelerate in late 2019 and is now above 3,000 but was above 2,500 in October 2019.



Data provided by Energy Queensland.

Stated ownership is higher than the actual number of cars registered, especially in South East Queensland.

BEV

1.4%
state they own a BEV

1.7% SEQ
1.0% Regional

This is 38 respondents
8 x Holden Volt
7 x Assorted BMWs
5 x Assorted Tesla
4 x Hyundai Kona

PHEV

0.3%
state they own a PHEV

0.6% SEQ
0.1% Regional

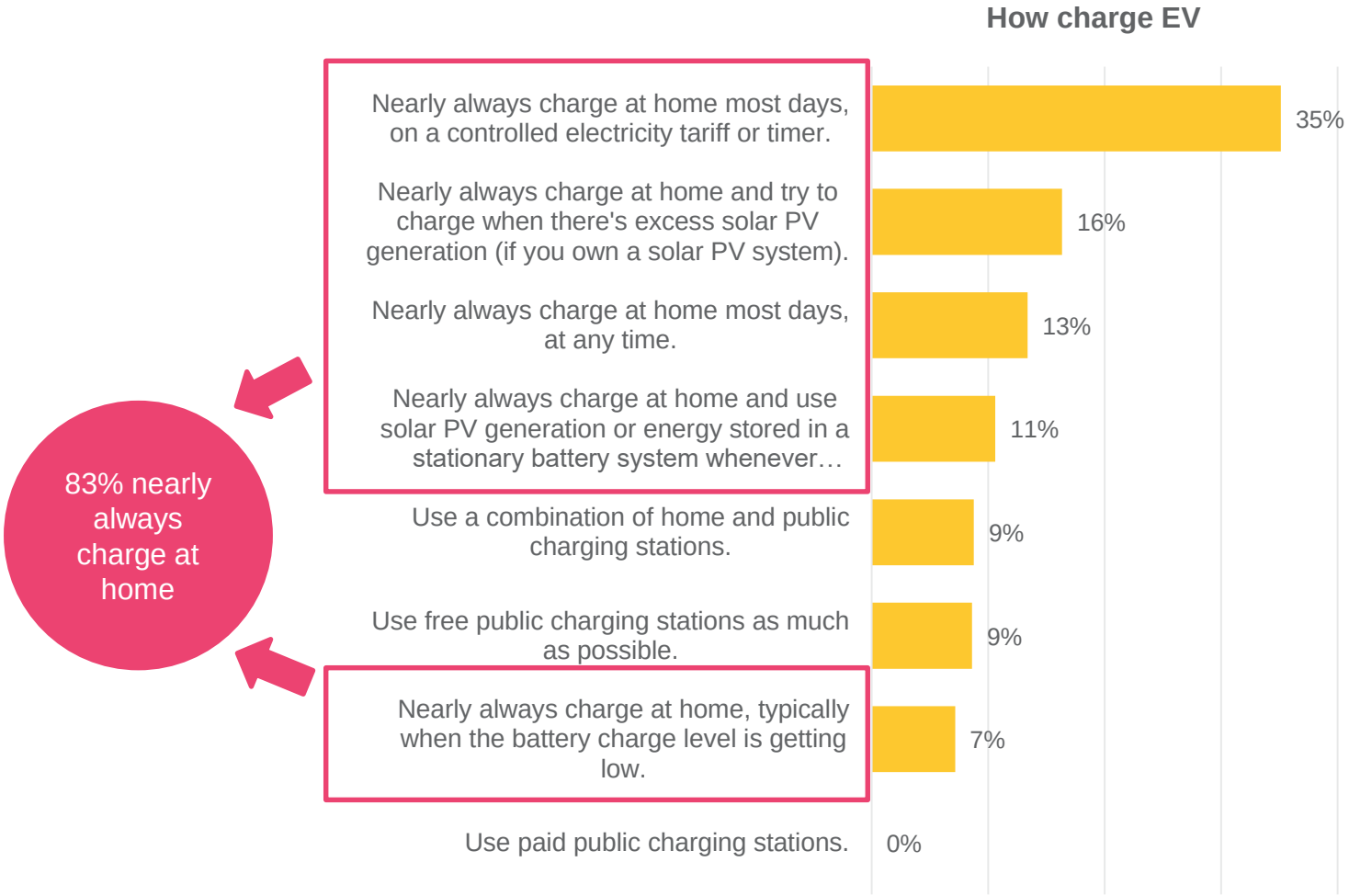
This is 10 respondents
2 x Nissan Leaf
1 x Mitsubishi, Volvo, Audi, Holden, Blade. Porsche, BMW

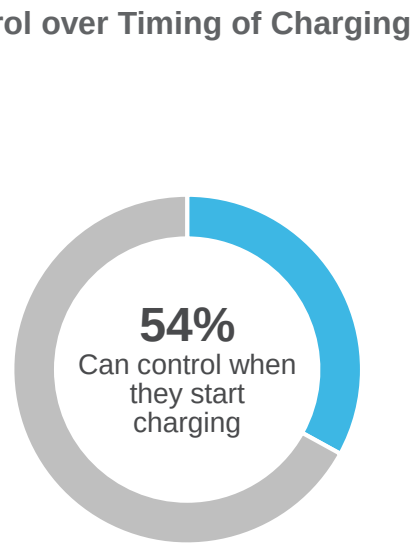
Note: there does not appear to be any confusion over ownership of EVs despite the higher level of stated ownership vs the actual number of registered EVs.

Definitions provided to respondents:
EV: Plug-in electric car: Is a vehicle that needs to be plugged into an electric power point in order to recharge and DOES NOT use traditional fuel such as petrol or diesel. This is NOT a mobility scooter or golf buggy.
PHEV: Plug-in hybrid car: Is a vehicle that can be plugged into an electric power point in order to recharge and uses traditional fuel such as petrol or diesel. It is NOT a regenerative-braking hybrid vehicle, such as a Toyota Prius.

F1. Do you currently own either a plug-in electric car, or a plug-in hybrid car?
Base: Total Sample (n=4,536)

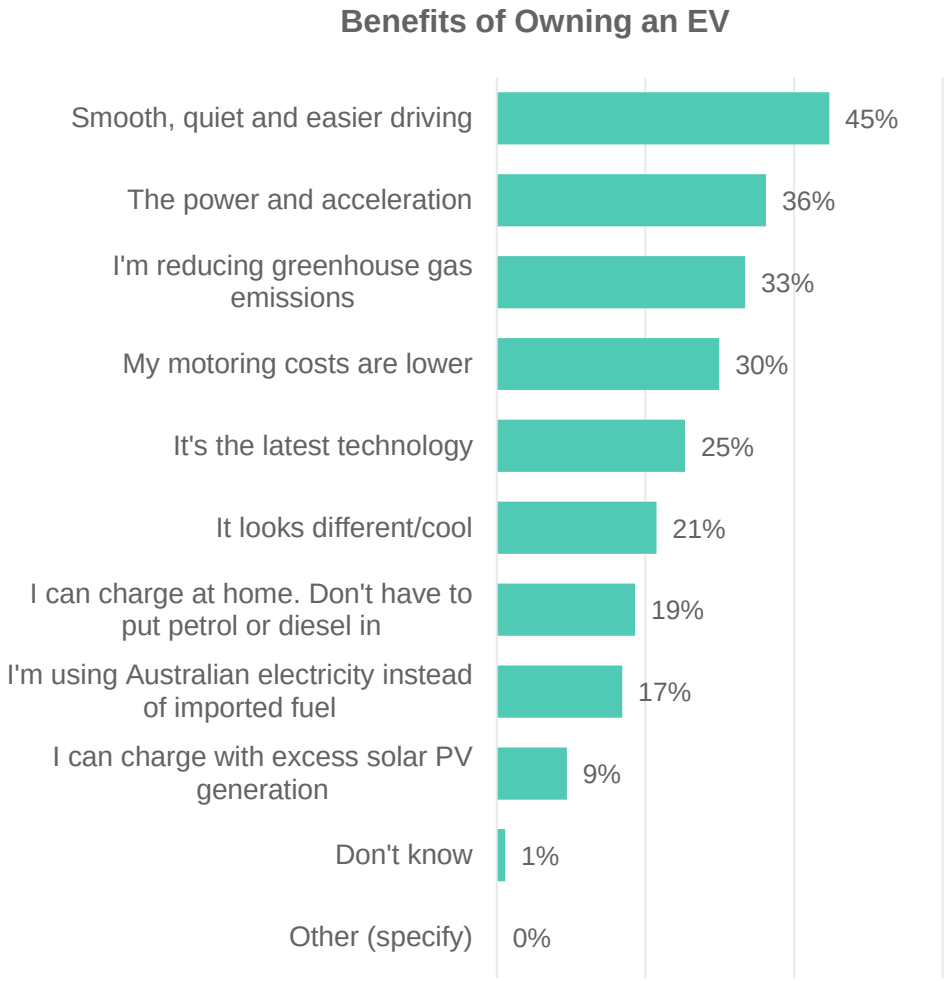
Current owners of EVs nearly always charge at home, with many controlling when they charge for a lower tariff.

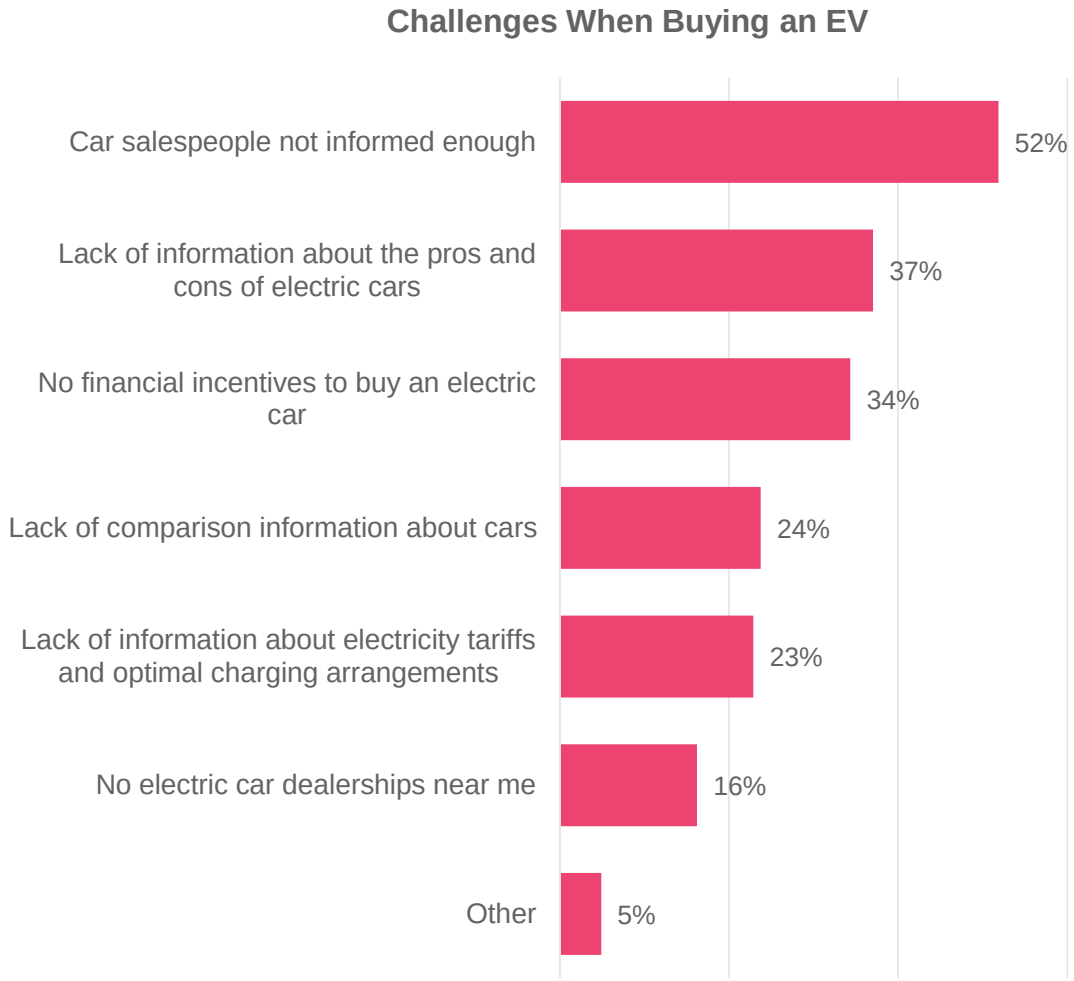




F3NEW - How do you normally charge your electric car?
F3 - Do you have the ability to control when your electric car will start charging (other than as soon as it's plugged in)? This may be so you can charge your electric car on an off-peak electricity tariff, when your solar PV system is operating, or after
Base: Own an EV (n=46)

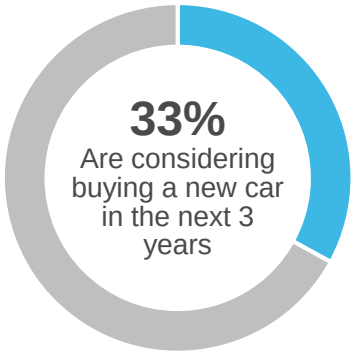
The performance of EVs and the reduced GHGEs are key benefits for owners.
A lack of information is the primary challenge when buying.

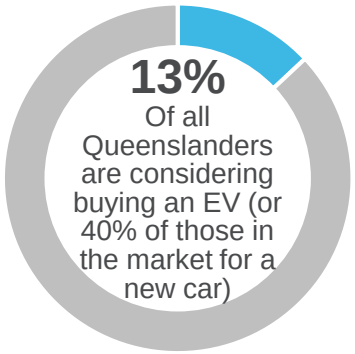


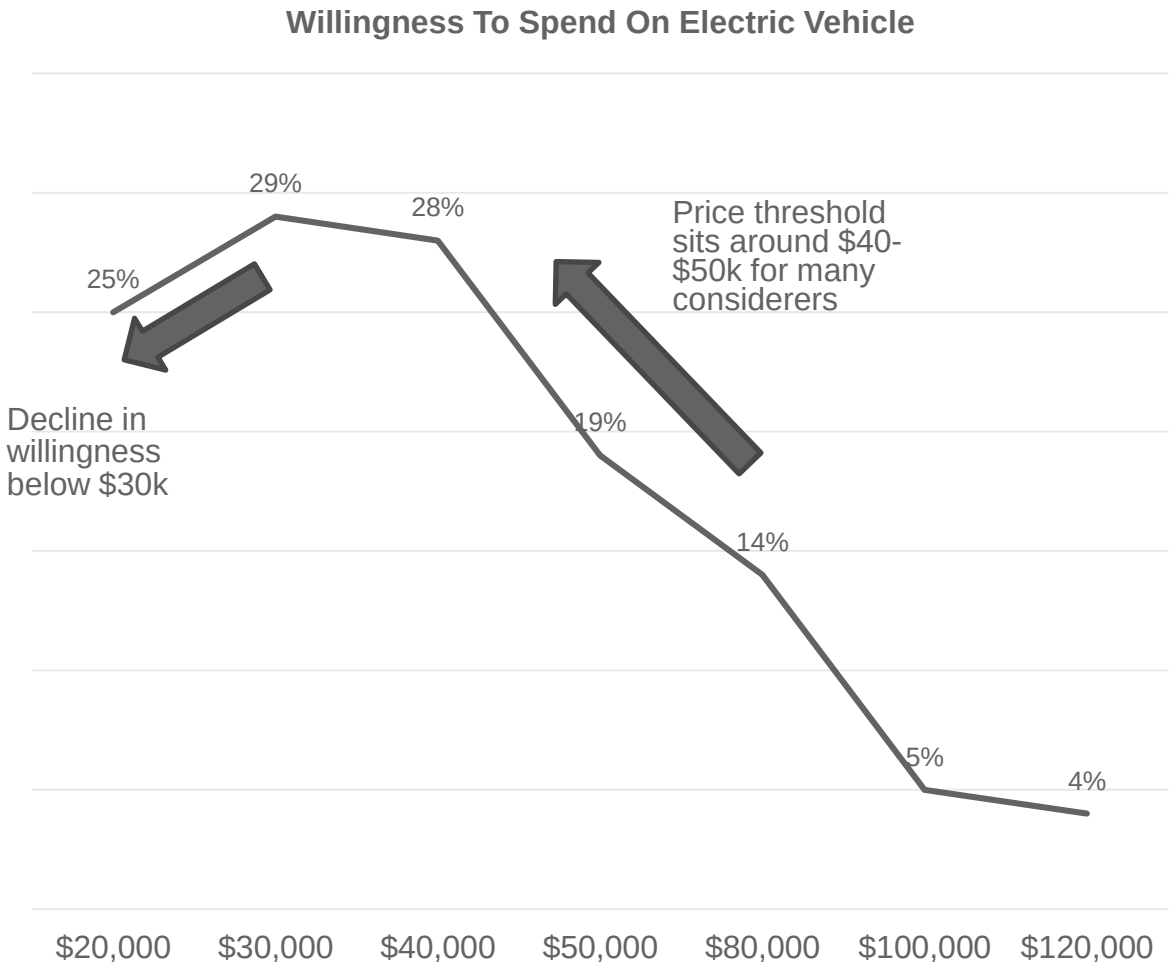


F5. What challenges did you encounter when purchasing your electric car?
F6 . What are the main benefits you see in owning an electric car? (Select a maximum of three)
Base: Own an EV (n=46)

Only 13% of Queenslanders are specifically in the market for an EV, however a cheaper price below $30k wouldn't encourage this group to buy.







F8. Would you consider purchasing a plug-in electric car or plug-in hybrid car in the next 3 years?
Base: Total Sample
F9. Below are some potential prices for three different types of motor vehicles. What prices would you be willing to spend on a plug-in electric, plug-in hybrid, and traditional motor vehicle? Please select all prices that apply to you for each vehicle type.
Base: Considering an EV

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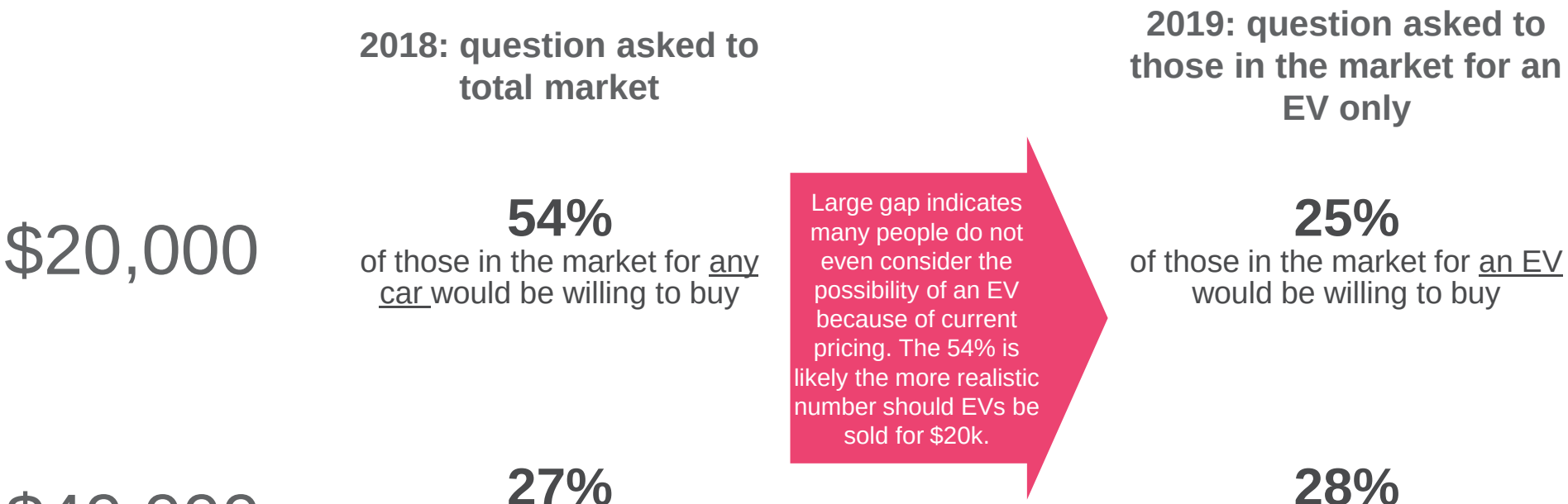
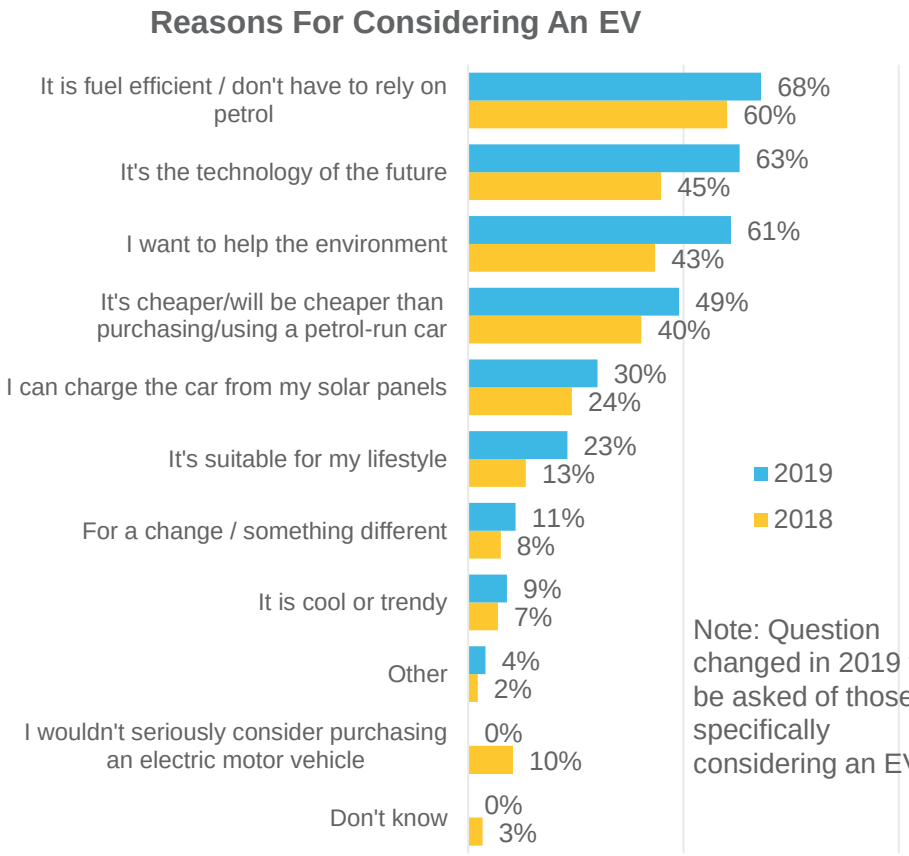
Yet we can see that a large proportion of Queenslanders are not considering because prices above $20,000 are an immediate barrier.

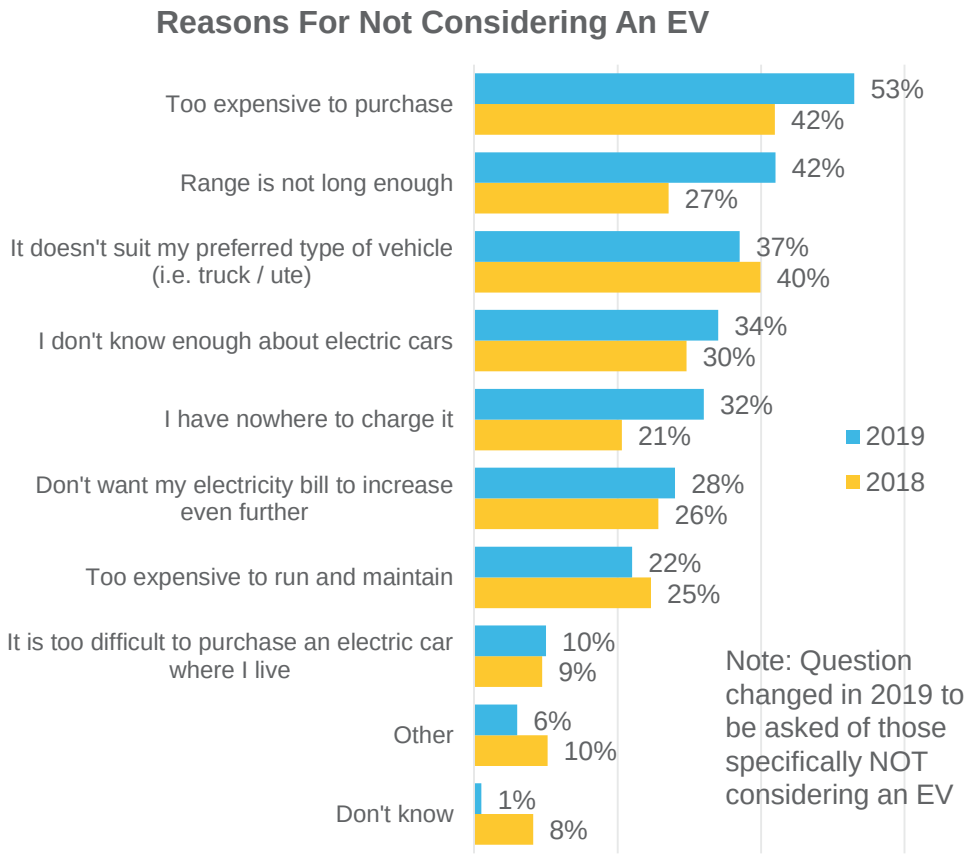
Willingness To Spend On Electric Vehicle



F9. Below are some potential prices for three different types of motor vehicles. What prices would you be willing to spend on a plug-in electric, plug-in hybrid, and traditional motor vehicle? Please select all prices that apply to you for each vehicle type.
Base: Considering an EV

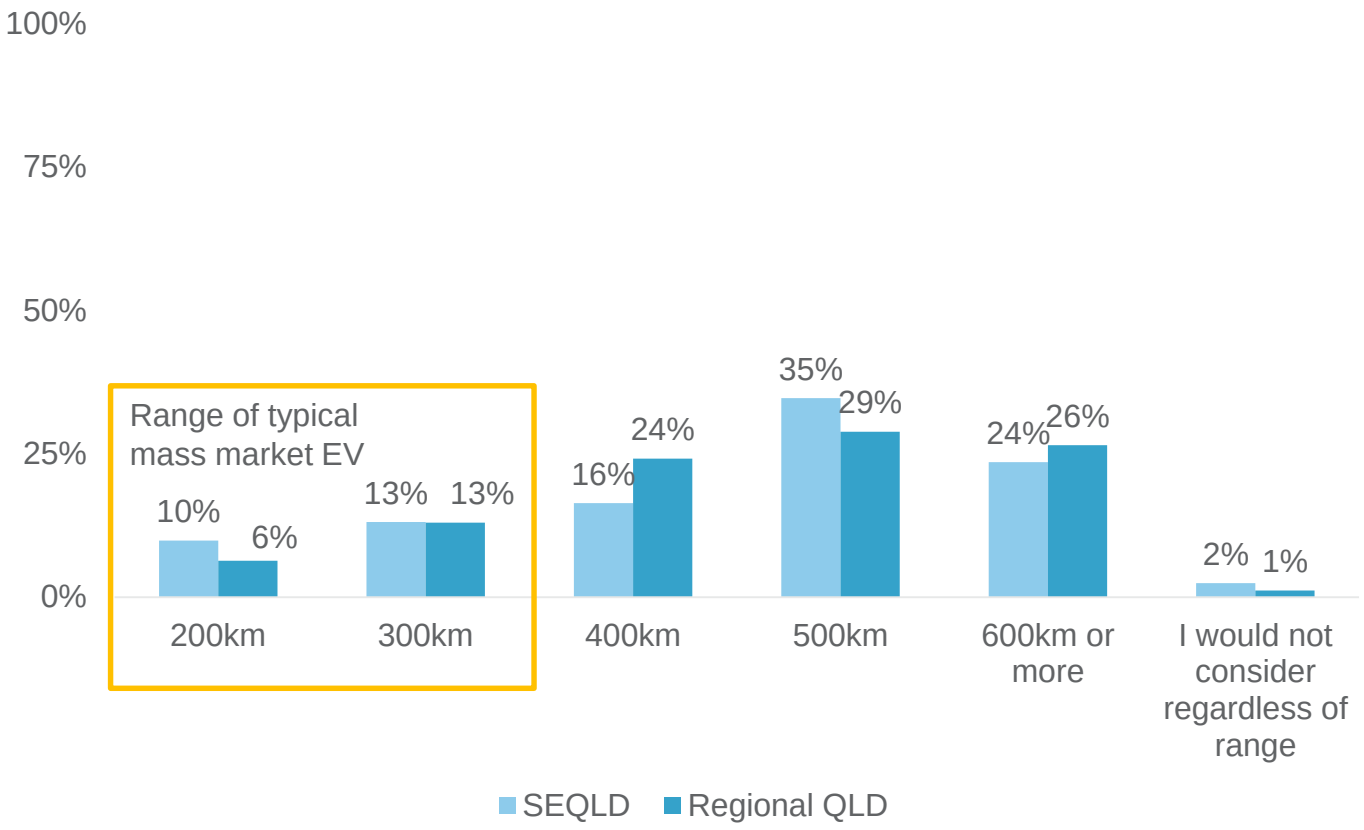
And the low range of current EVs is still a barrier for the large group of non-considerers.





F6. Why are you open to purchasing a plug-in electric or a plug-in hybrid car? Please note an electric car does not include a mobility scooter, golf buggy or electric bike.
F7. Why are you not considering purchasing a plug-in electric or plug-in hybrid car? Please note an electric car does not include a mobility scooter, golf buggy or electric bike.
Base: Those willing to consider an electric vehicle (n=518) / those not considering an electric vehicle (n=562)

Typical EV range falls short of most buyers' expectations.



- The typical range of a $50,000 EV has been 230-300km in the past.
- This is now starting to get closer to 300km, and new models are expected to go above 400km (eg the Hyundai Kona).

F5A. What minimum driving range would an electric vehicle need to achieve (on a single charge) for you to consider purchasing one?
Base: Those considering an electric vehicle (n=518)

EV manufacturers are slowly breaking down the cost and range barriers with a 9% decrease in price and a 5% increase in range in 2019.

	Make/Model	Price (AUD)	Range (km)
EV	Jaguar I-PACE (HSE)	164,990	470
	Tesla Model X (100D)	161,015	580
	Jaguar I-PACE (SE)	159,962	470
	Tesla Model S (100D)	147,856	713
	Tesla Model 3	71,358	460
	BMW i3 (120 Ah)	68,700	260
	Kia e-Niro (*note: will not be released)	55,000	450
	Nissan Leaf	54,502	270
	Renault Zoe	53,040	300
	Hyundai IONIQ (Electric)	52,218	311
PHEV	BMW i8 (PHEV)	318,900	55
	Audi e-tron	122,362	42
	Mitsubishi Outlander PHEV	50,990	54
	Hyundai IONIQ (PHEV)	46,077	63

$99k average EV cost
(down 9% from $109k in 2018)

421km average EV range
(up 5% from 401km in 2018)

Source of data

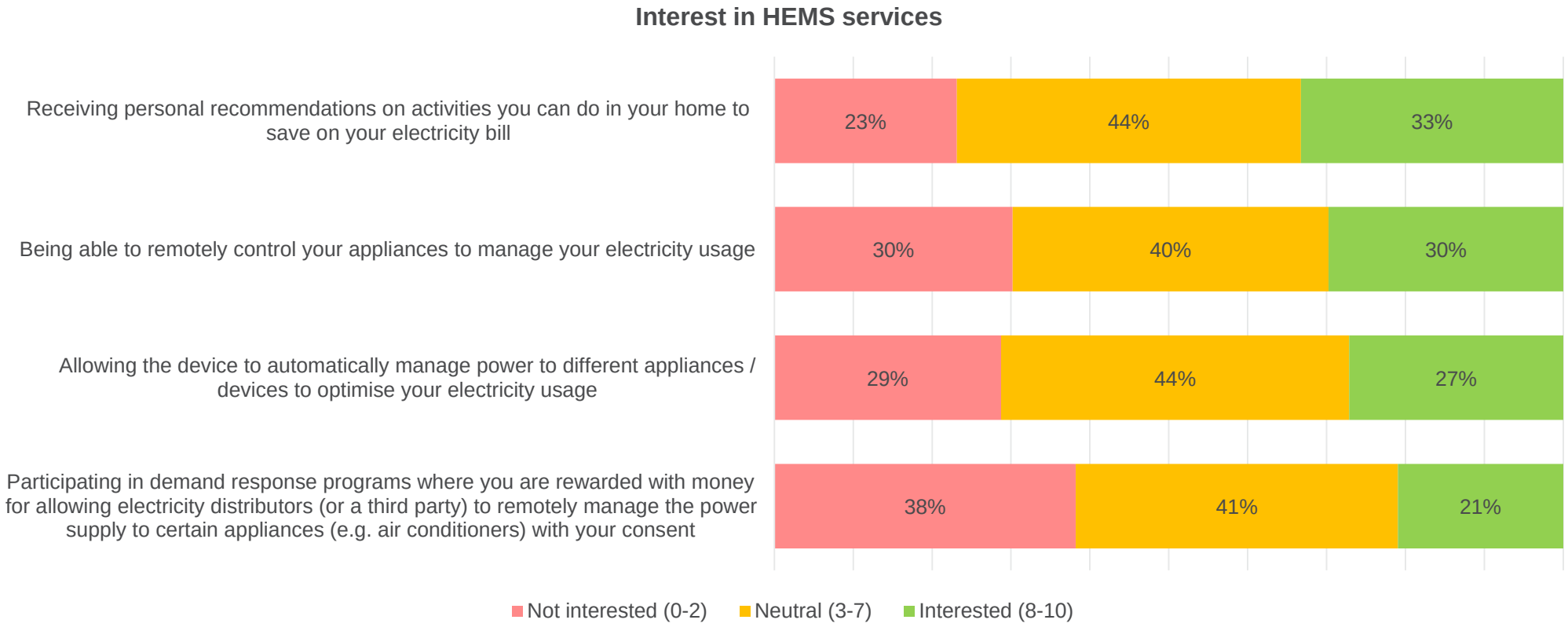
https://quote.jaguar.com.au/view/2020-Jaguar-I-Pace/18463628
https://www.tesla.com/en_au/models/design#battery (Drive Away Price in Queensland, Long Range)
https://quote.jaguar.com.au/view/2020-Jaguar-I-Pace/20509293
https://www.jaguar.com.au/jaguar-range/i-pace/specifications/index.html
https://www.tesla.com/en_au/models/design#battery (Drive Away Price in Queensland, Long Range)
https://www.tesla.com/en_au/models/design#battery (Drive Away Price in Queensland, Standard Range Plus)
https://www.carsguide.com.au/bmw/i3/2020 (based on Manufacturers Suggested Retail Price)
https://www.bmw.com.au/en/all-models/bmw-i/i3/2018/at-a-glance.html
https://www.caradvice.com.au/793504/kia-electric-cars-australia/ (estimated AUD price – rollout delayed in Australia)
https://www.nissan.com.au/vehicles/browse-range/leaf.html
https://www.renault.com.au/build-and-price?category=cars#/summary (estimate Drive Away Price in Queensland)
https://www.hyundai.com/au/en/shop/calculator#/ioniq-electric (estimate Drive Away Price in Queensland)
https://www.carsguide.com.au/bmw/i8/price/2020/hybrid?id=wljNPVDM (Coupe, based on Manufacturers Suggested Retail Price)
https://www.drive.com.au/news/2020-audi-q7-60-tfsi-e-launches-in-europe-unsure-for-oz-122587?trackLink=articleResultsHero (55 TFSI e model)
https://www.caradvice.com.au/812171/2020-mitsubishi-outlander-phev-pricing-and-specs/ (Outlander ES)
https://www.mitsubishi-motors.com.au/vehicles/outlander-phev
https://www.hyundai.com/au/en/shop/calculator#/ioniq-plug-in-hybrid (Drive Away Price in Queensland, Elite model)
https://www.hyundai.com/au/en/cars/blue-drive/ioniq/plug-in-hybrid (Plug-in Hybrid range)

Deep Dive 5:
HEMS, Tariffs, & Digital Meters.

Key Findings:
HEMS, Tariffs, & Digital Meters.

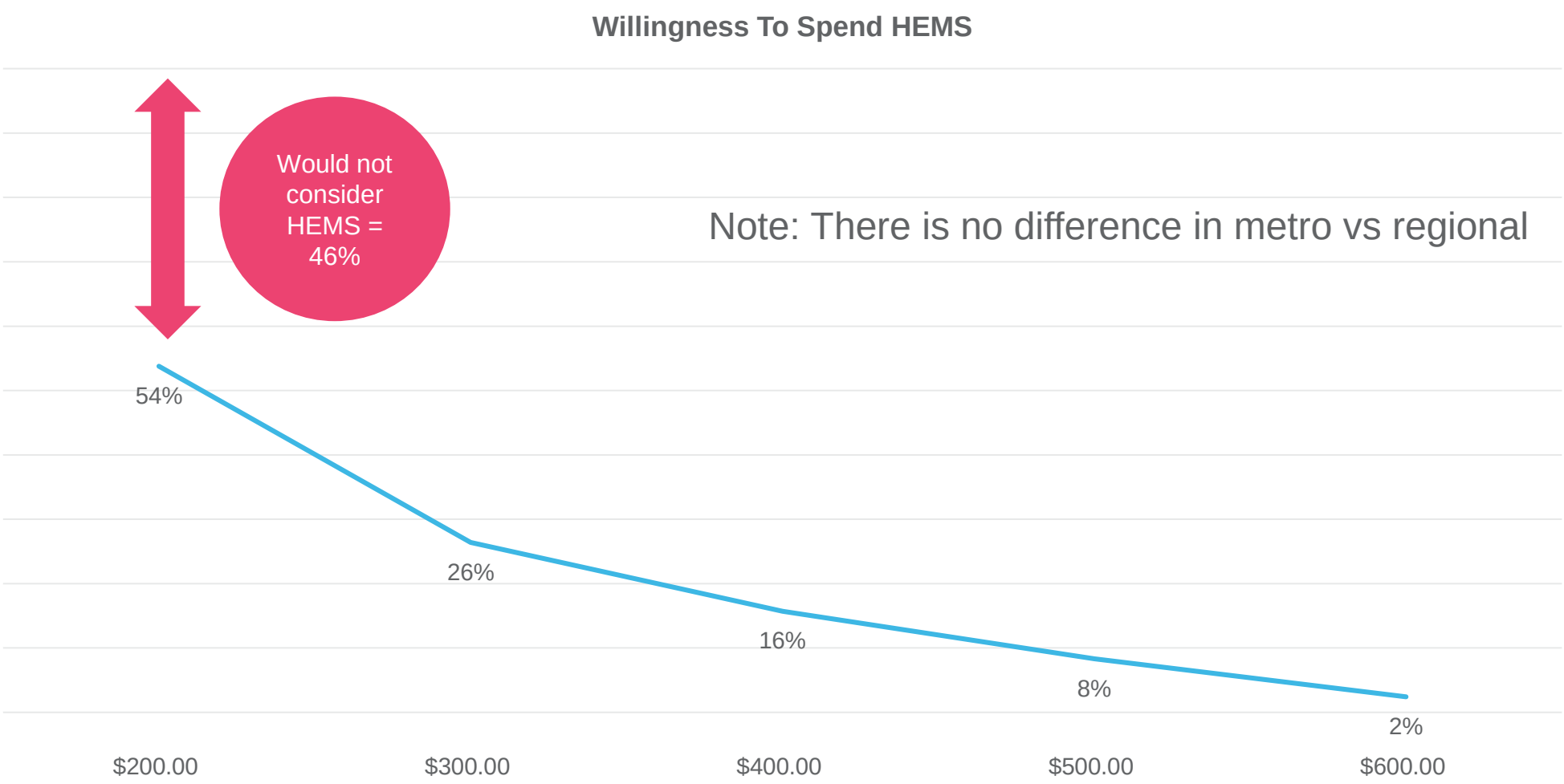
- There is only moderate interest in HEMS services, with the greatest interest in receiving personal recommendations on how to save.
- The maximum most Queenslanders would pay for HEMS is $200, any higher and consideration sharply falls off.
- Younger Queenslanders are far more likely to pay for HEMS with 71% stating they would be willing to pay $200 for it. While 2 in 3 older Queenslanders (aged 55 and above) have no interest, whatever the price.
- The majority of households still do not know which tariff they use (68% in South East Queensland; 59% in regional Queensland).
- A large proportion of households assume they have a digital meter when in fact they do not. Across Queensland, 36% believe they have a digital meter while 10% actually do.
- Many Queenslanders see high value in the fact that digital meters can facilitate the removal of estimated bills.

There is only moderate interest in HEMS services, with the greatest interest in receiving personal recommendations on how to save.



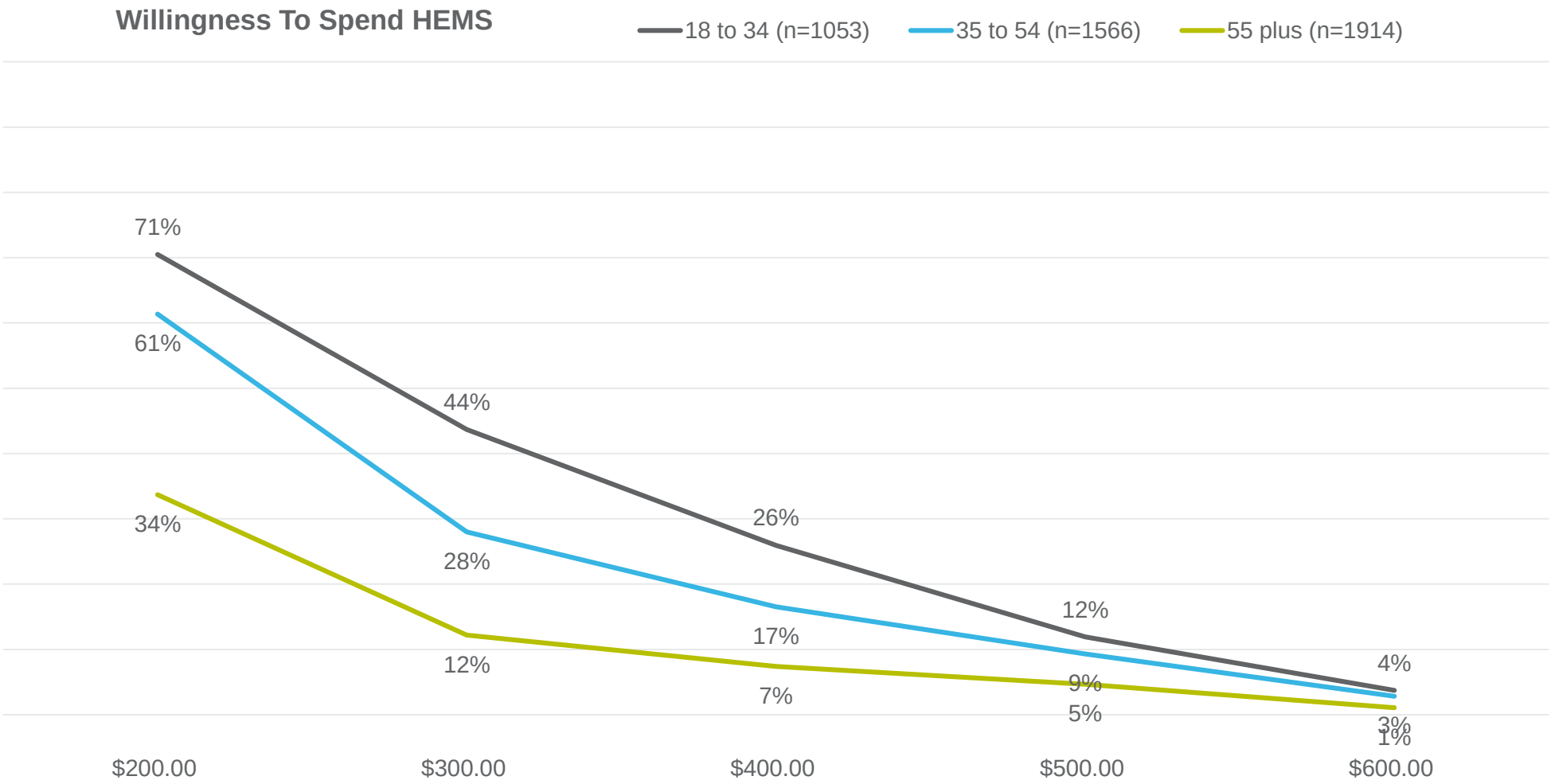
E5A. Households are increasingly becoming interconnected with a variety of electronic devices that enable automation, remote control and information on your electricity usage. Below is a list of some of the services these Home Energy Management Systems (HEMS) could offer.
Using a scale from 0 to 10, where 0 means 'not at all interested' and 10 means 'very interested', please indicate your level of interest in the following services.
Base: Total Sample (n=4,536)

$200 is a key price threshold for a HEMS system, consideration drops off sharply after this price point.



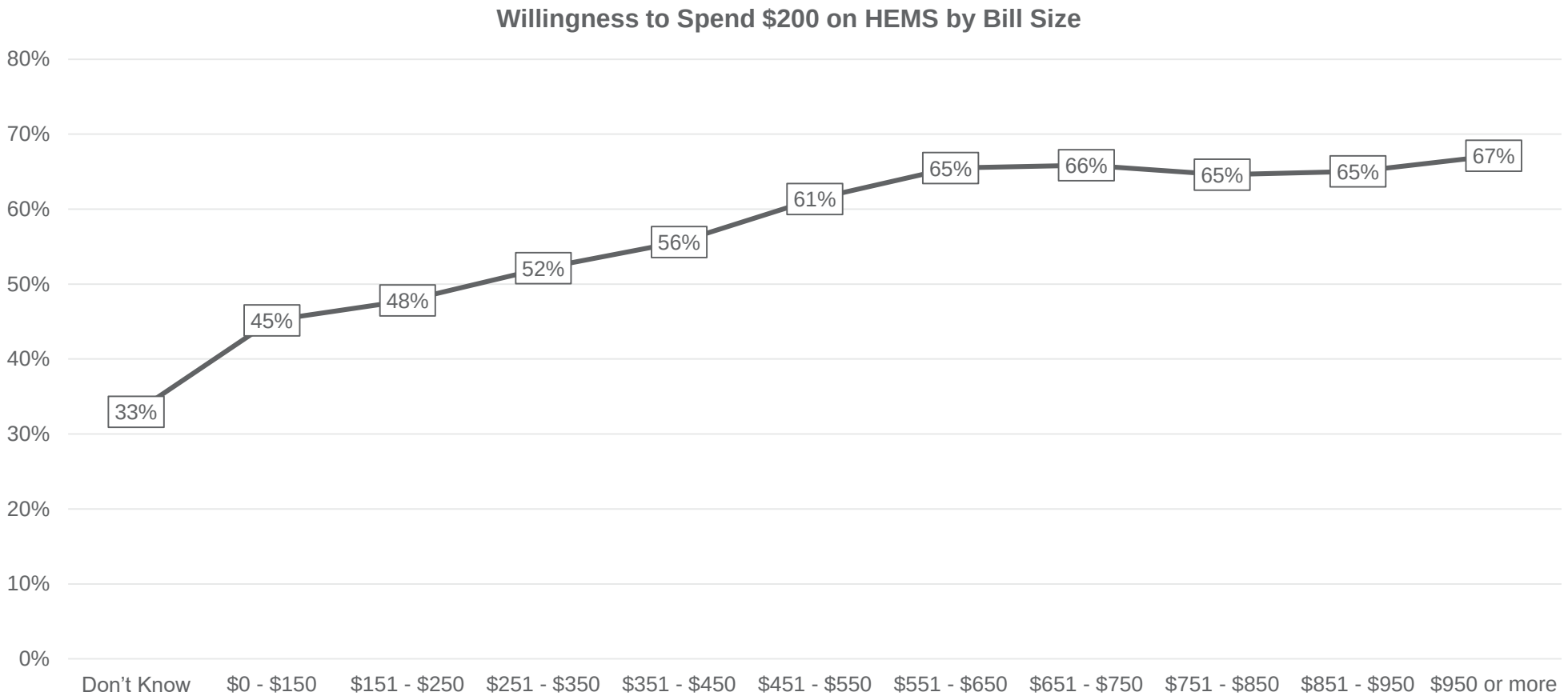
E5B. Thinking of the services offered by a Home Energy Management System (HEMS), what is the maximum you would be willing to spend on such a system?
Base: Total Sample (n=4,536)

It is younger Queenslanders aged under 35 that are willing to spend on HEMS. A $200 price point remains a price threshold to ensure maximum penetration and uplift.



E5B. Thinking of the services offered by a Home Energy Management System (HEMS), what is the maximum you would be willing to spend on such a system?
Base: Total Sample

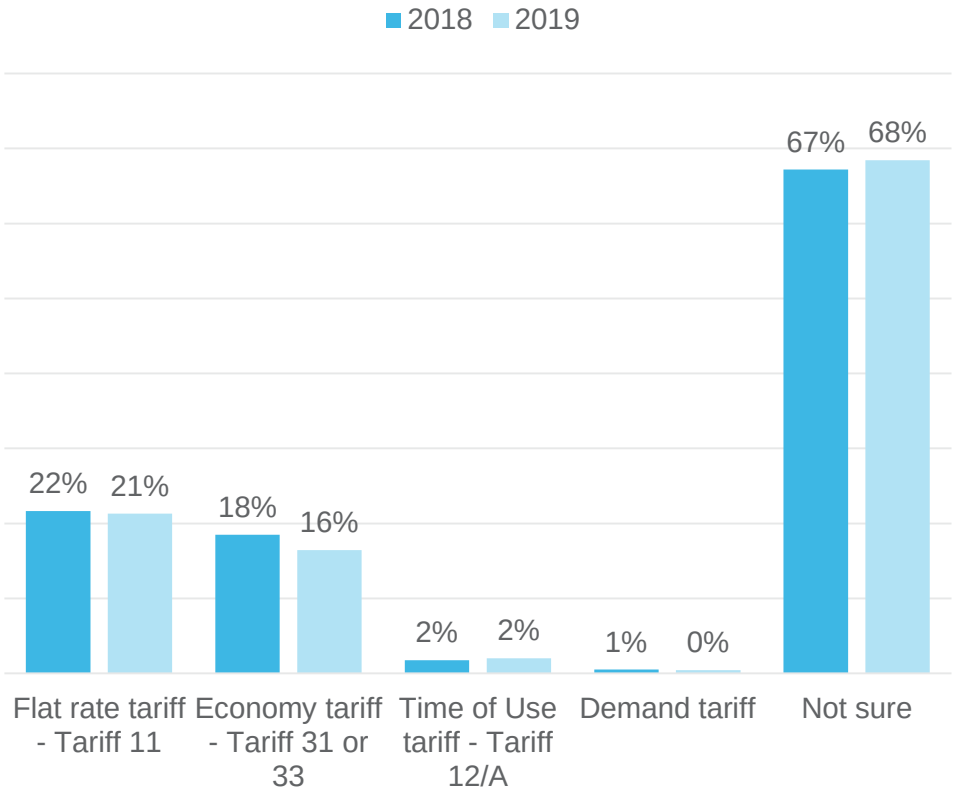
And Queenslanders with higher bills have stronger interest to pay $200 for HEMS.



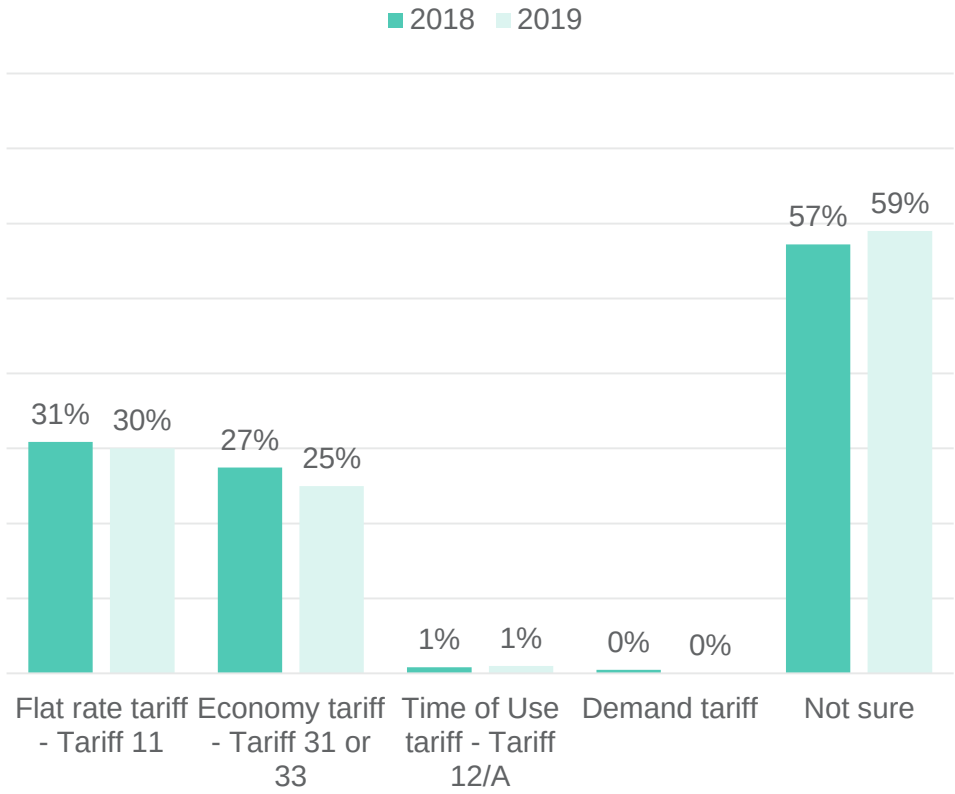
E5B. Thinking of the services offered by a Home Energy Management System (HEMS), what is the maximum you would be willing to spend on such a system?
Base: Total Sample (min n=100)

The majority of Queensland households do not know which tariffs they use.

Perceived Tariff Usage: South East Queensland



Perceived Tariff Usage: Regional Queensland



G1A. Do you know which electricity tariff / plan you are on?
G1B. What type of tariff / plan are you on?
Base: Total Sample (n=4,536)

Approximately one in five Queensland respondents make the incorrect assumption that they have a digital meter.

36%
of ALL Queensland households claim to have a digital meter (34% in 2018)

34%
of South East Queensland households claim to have a digital meter (33% in 2018)

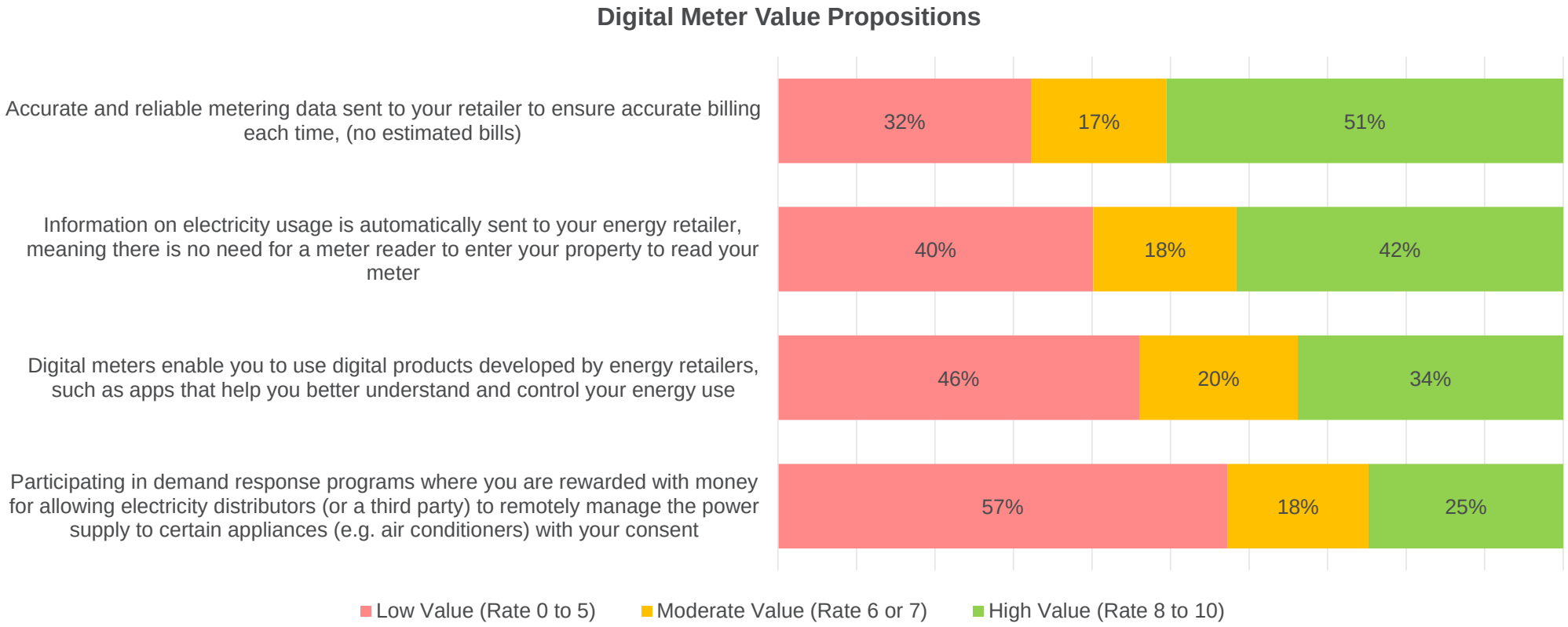
38%
of regional Queensland households claim to have a digital meter (35% in 2018)

10%*
actually have a digital meter

DESCRIPTION USED IN SURVEY: A digital meter measures how much electricity you've used and when. The meter sends this information back to your energy retailer remotely, so no one needs to visit your property to read the electricity meter. For a meter to be considered digital it needs to measure usage in half-hour periods.
(source: https://www.ergon.com.au/retail/business/account-options/digital-meters/digital-meters-for-homes)

* Internal Energy Queensland data
G3. Do you have a digital meter installed in your electricity meter box?
Base: Total Sample (n=4,536)

The greatest value a digital meter can provide is to facilitate the removal of estimated bills.



DESCRIPTION USED IN SURVEY: A digital meter measures how much electricity you've used and when. The meter sends this information back to your energy retailer remotely, so no one needs to visit your property to read the electricity meter. For a meter to be considered digital it needs to measure usage in half-hour periods. *(source: https://www.ergon.com.au/retail/business/account-options/digital-meters/digital-meters-for-homes)*

Q. Below is a list of some of the services a digital meter could offer. Using a scale from 0 to 10, where 0 means 'not at all valued' and 10 means 'highly valued', please indicate your level of interest in the following services.?
Base: Total Sample (n=4,536)

The need for flexible payment options is highest among fortnightly bill payers, single parents, younger Queenslanders and part time workers.

Ideal benefit: flexible payment options, such as weekly, monthly or smooth payments based on my income

35%
Total Queensland

56%
Already paying electricity bill fortnightly

45%
Single Parents

42%
Aged under 35

42%
Part Time Workers

I8B . Which benefits would your ideal energy company offer?
Base: Total Sample (n=4,536)

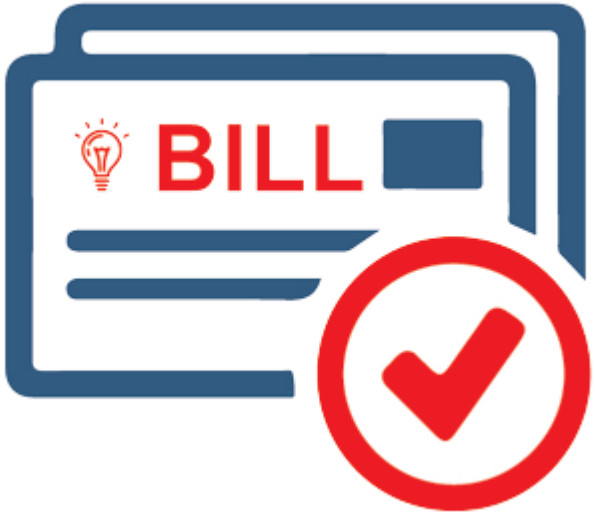
Deep Dive 6:
Costs, Supply & Perceptions Of The Industry.

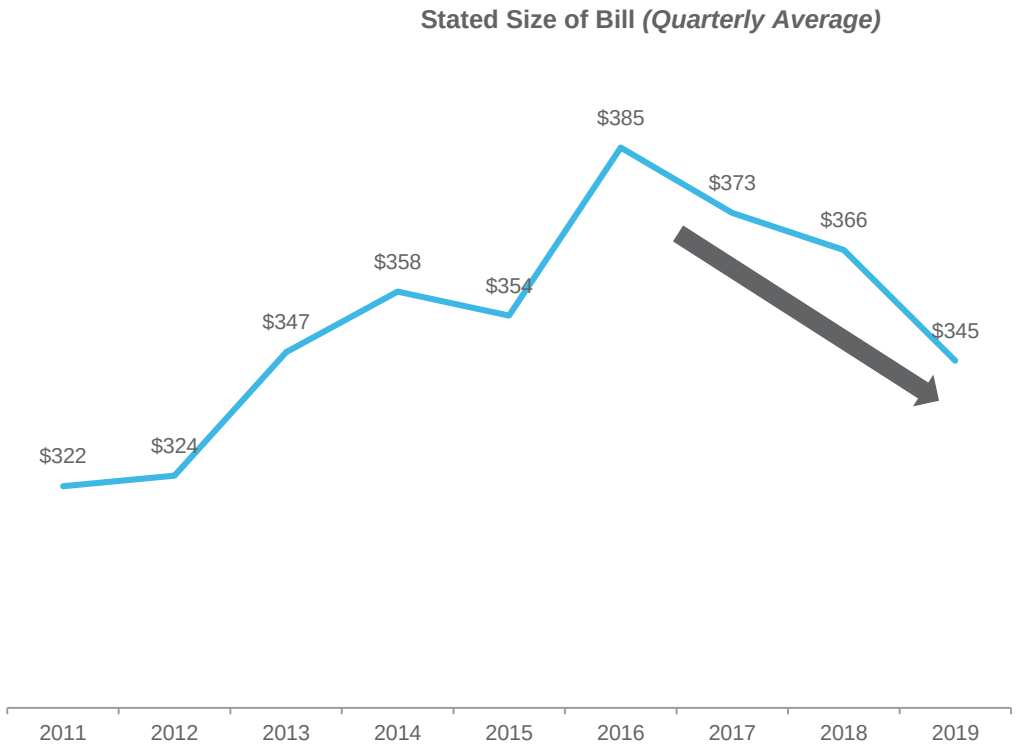
Key Findings:

Costs, Supply & Perceptions Of The Industry.

- Price of electricity is no longer the looming spectre it was. Prices have fallen (at least stated bill size has) over the past few years, reducing the amount of conversation in the media and around the dinner table.
- The majority of Queenslanders are still expecting price to keep going up, although expectations for huge price increases above15% have dramatically fallen away.
- In this context, it is no wonder than bill concern is at a 3 year low. Given the decreasing prices, it is also likely that bill concern will continue to fall into next year.
- Even with improving bill concern, electricity bills are still the top household cost concerns among regional Queensland households.

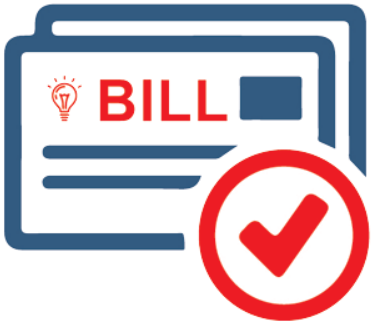
Stated average bill sizes have dropped over the past 3 years, with a further fall in 2019.

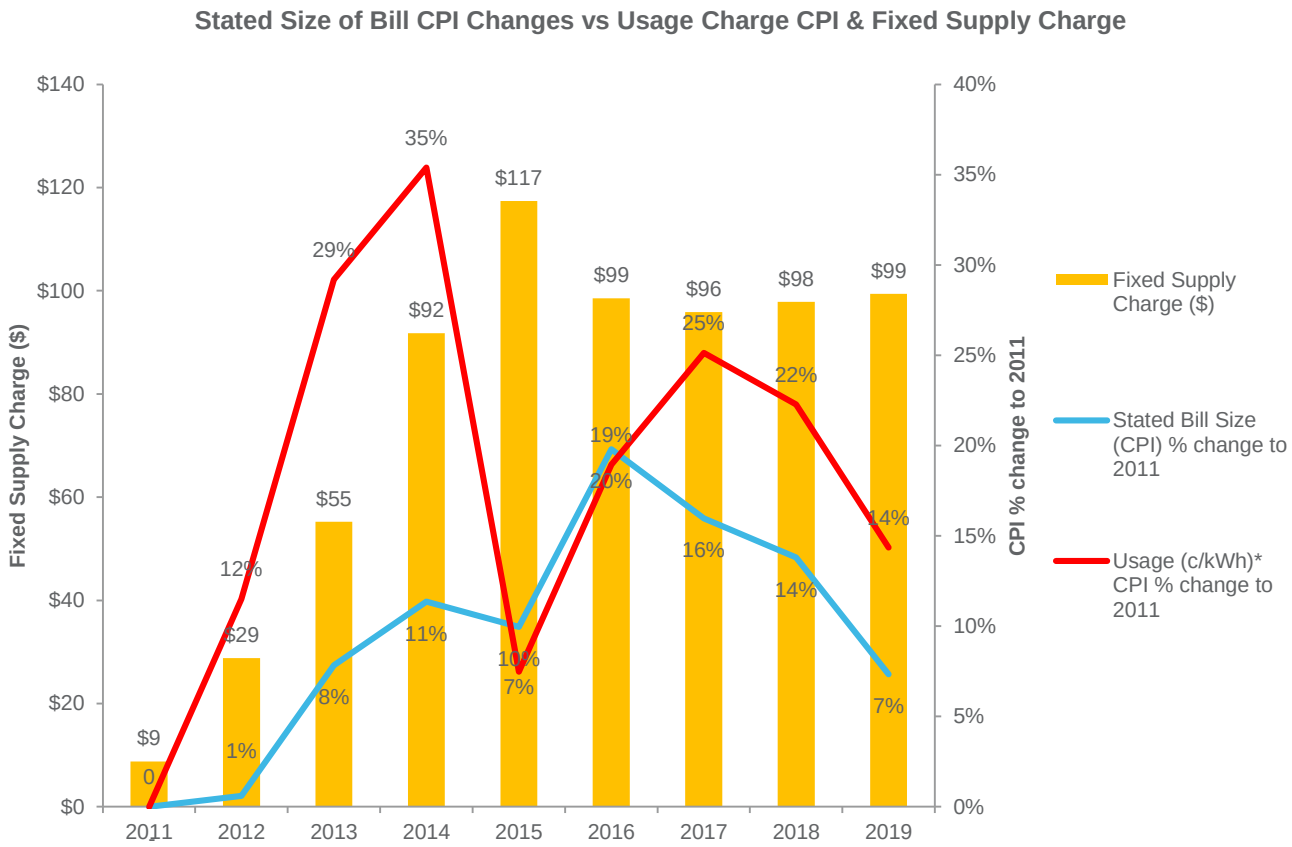




A10. On average, how much is your electricity bill per fortnight/month/quarter? This is after any rebates you may receive
Base: Total Sample (n=4,536)

Comparing fluctuations in stated bill size to actual usage and fixed charges we can see the same pattern. Usage charges have fallen for the past 2 years with the fixed supply charge stable.





Fixed and Usage charges from EQL Internal Data
A10. On average, how much is your electricity bill per fortnight/month/quarter? This is after any rebates you may receive
Base: Total Sample (n=4,536)

And there is less talk of electricity prices in 2019 than in 2018 though it is still a fairly common conversation in the media and with family & friends.

49% **(61% on 2018)**
Hear about electricity prices in traditional media at least once per month

32% **(41% on 2018)**
Discuss electricity prices with friends / family at least once per month

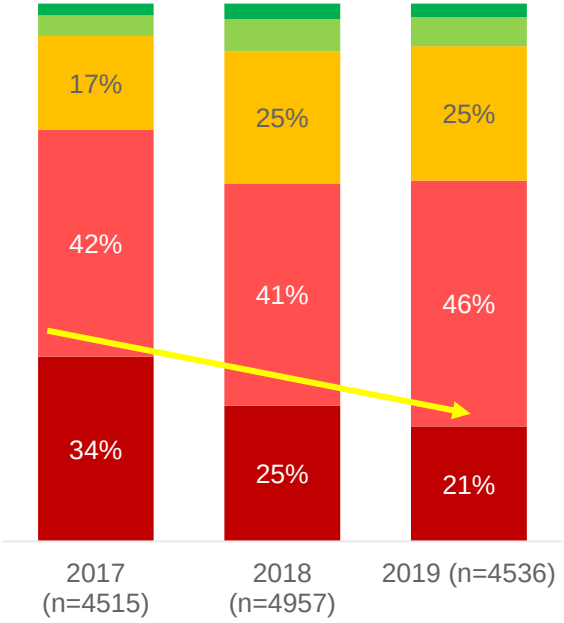
31% **(38% on 2018)**
Hear about electricity prices in social media at least once per month

Significantly higher/lower than 2018

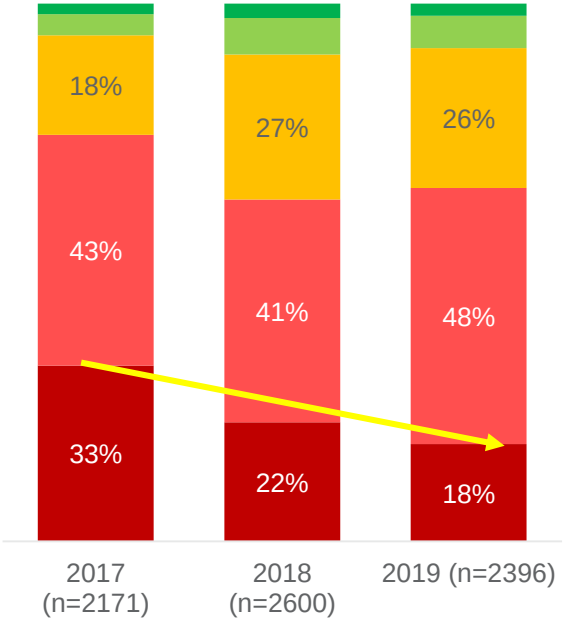
I1A. How often do you hear about electricity prices mentioned in the following situations?
Base: Total Sample (n=4,536)

The majority of Queensland households are still expecting further price increases over the next three years, though expectations for increases of 15% or more have eased.

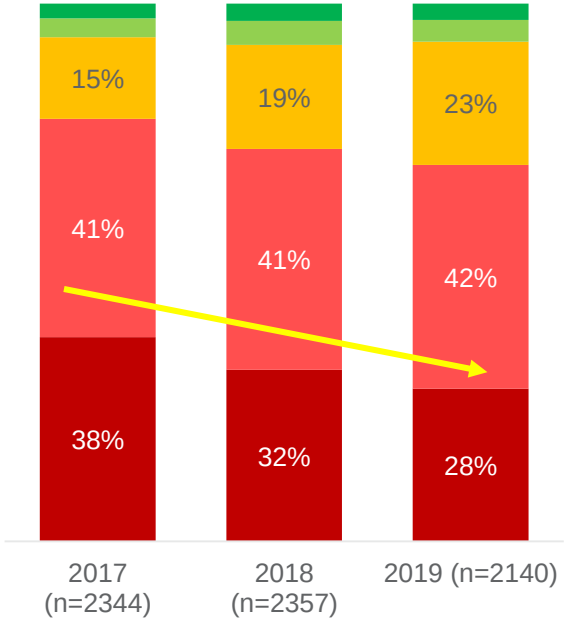
Expected Price Changes Total Queensland



Expected Price Changes South East Queensland



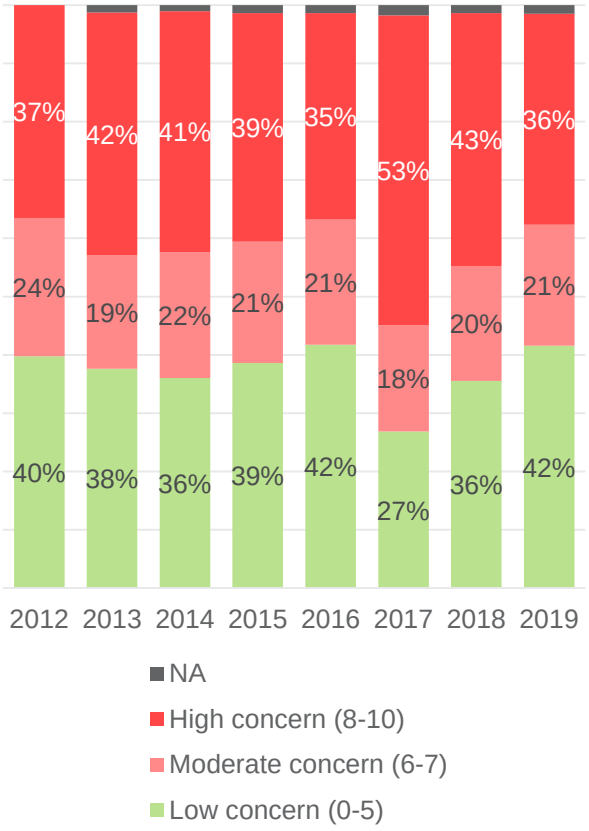
Expected Price Changes Regional Queensland



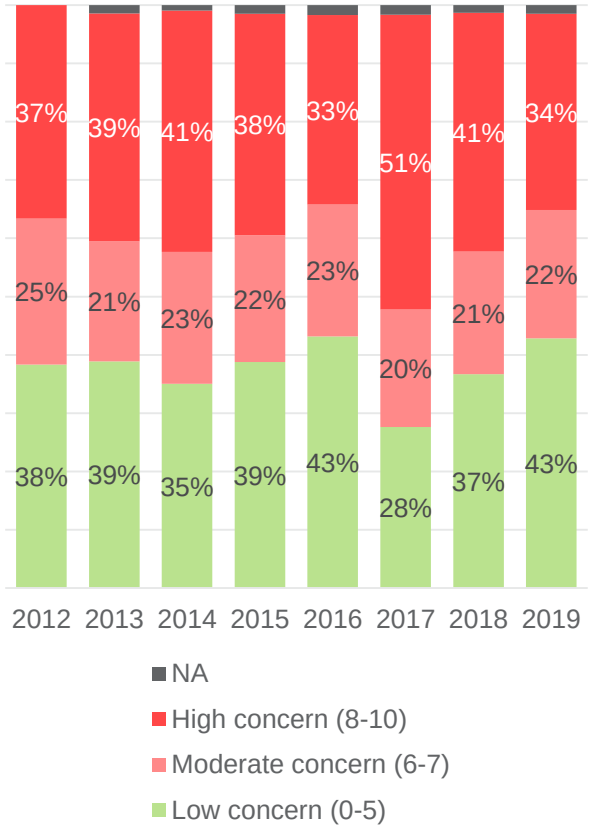
I1. Over the next three years, do you expect the price you pay for electricity to...
Base: Total Sample (n=4,536)

The level of bill concern has improved again in 2019 following a peak in 2017. Those with low concern are now the largest proportion.

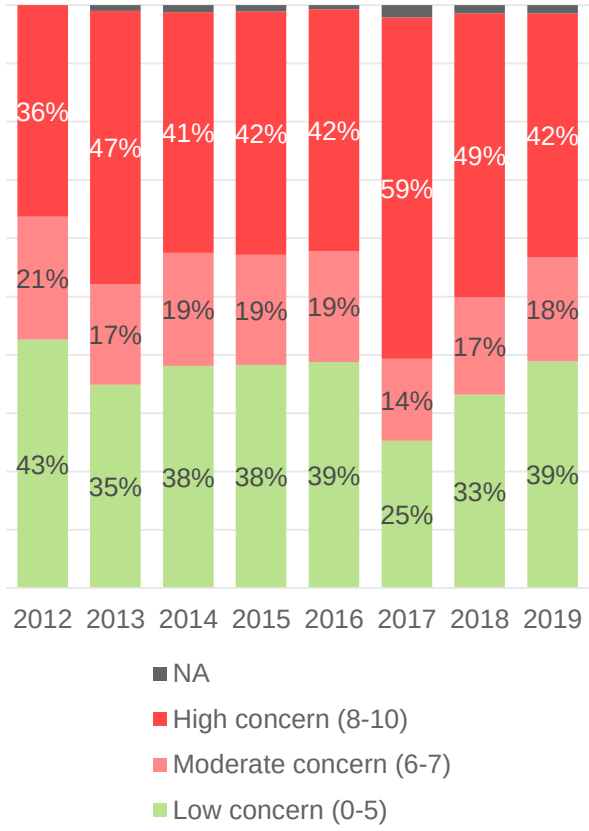
Bill Concern – Total Queensland



Bill Concern – South East QLD

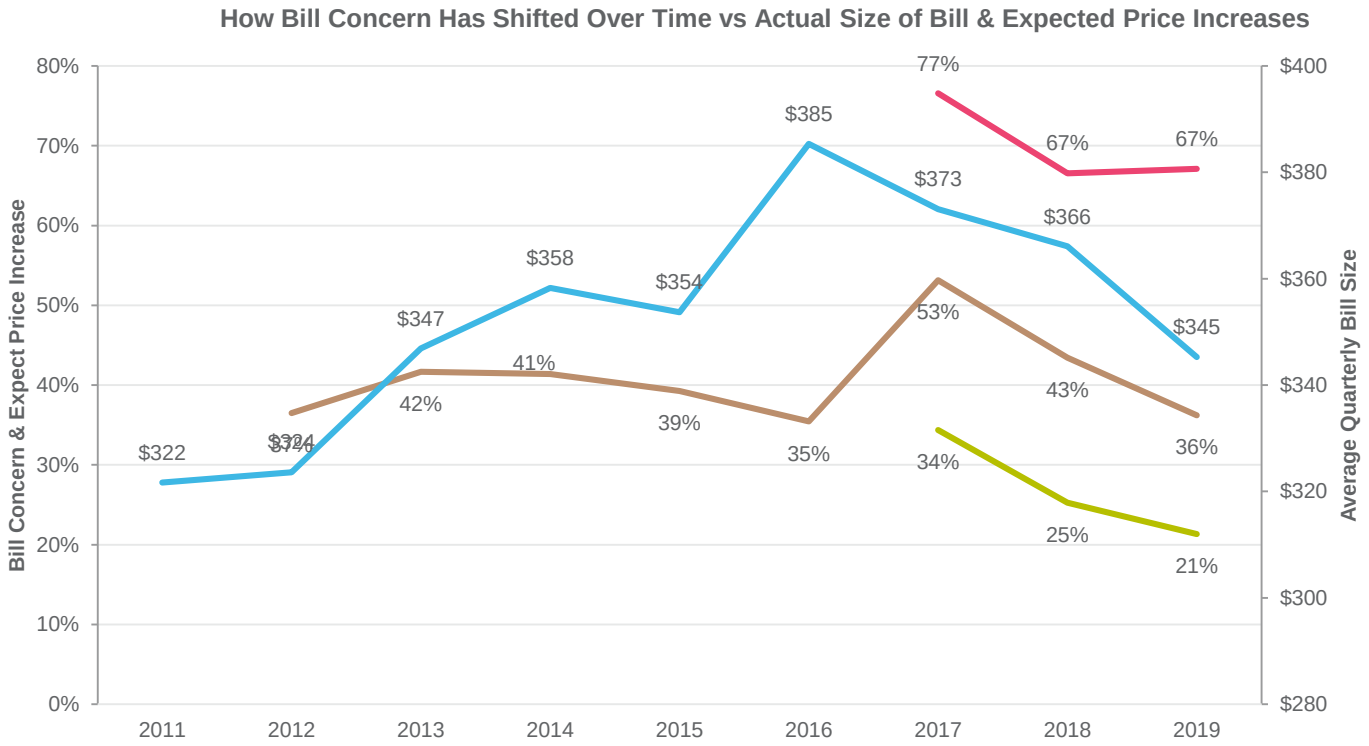


Bill Concern – Regional QLD



I2A. How concerned are you about your ongoing ability to pay your electricity bill? Please mark on the 0-10 scale below where 0 means 'not at all concerned' and 10 means 'very concerned'?
Base: Total Sample (n=4,536)

Bill concern has tended to lag actual bill size changes by 1 year, whereas evidence suggest future price expectations drive bill concern in real-time.

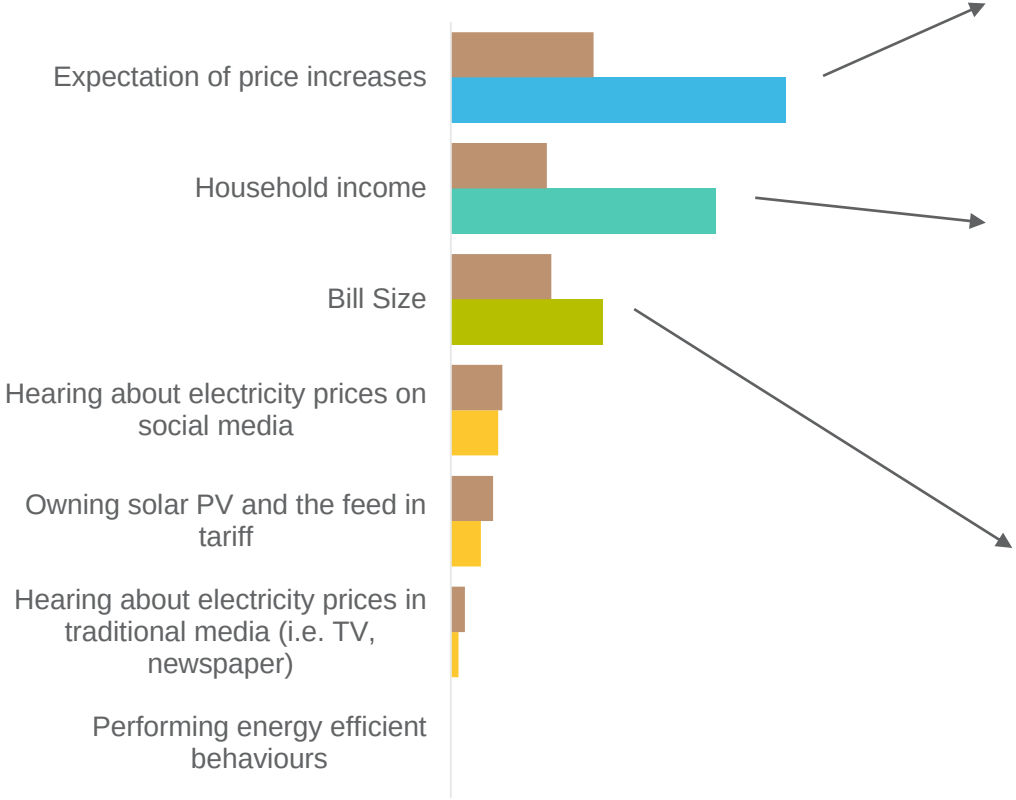


Most Queenslanders still expect an increase, but a smaller increase (5% to 15%) doesn't have as great an impact on bill concern.

I2A. How concerned are you about your ongoing ability to pay your electricity bill? Please mark on the 0-10 scale below where 0 means 'not at all concerned' and 10 means 'very concerned'?
Base: Total Sample (n=4,536)

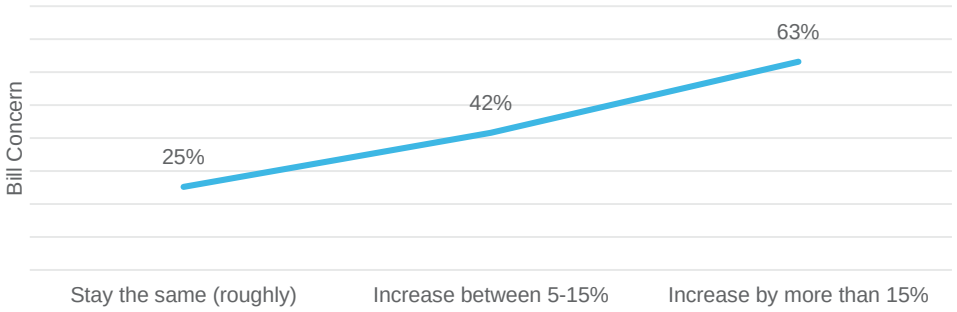
Given fewer expectations of price rises and a smaller actual bill size, these have less of an impact on bill concern this year.

Impact On Bill Concern

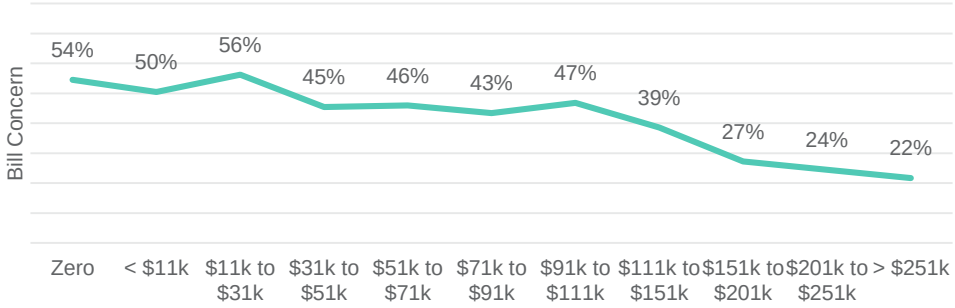


The chart above indicates strength of association between the above factors and bill concern.

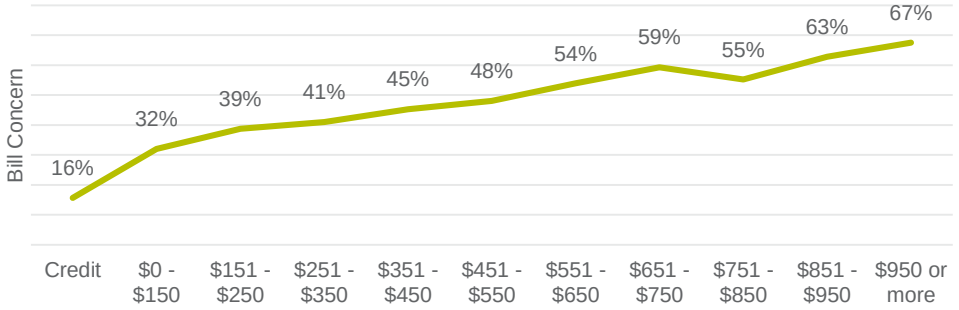
Impact Of Expected Price Increases On Bill Concern



Impact Of Household Income On Bill Concern



Impact Of Quarterly Electricity Spend On Bill Concern



I2A. How concerned are you about your ongoing ability to pay your electricity bill? Please mark on the 0-10 scale below where 0 means 'not at all concerned' and 10 means 'very concerned'?
Base: Total Sample w/ missing values on the above factors excluded (n=2,970)

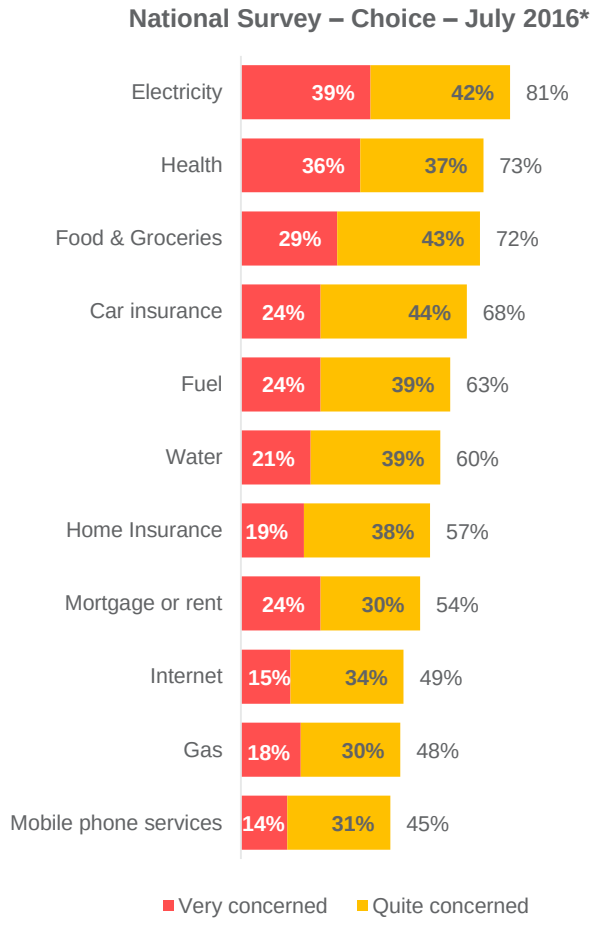
Even with improving bill concern, electricity bills are still the top household cost concerns among regional Queensland households.

South East Queensland

- **38%** Medical
- **37%** Fuel ↓
- **34%** Electricity ↓
- **31%** Groceries
- **28%** Water

Regional Queensland

- **42%** Electricity ↓
- **39%** Fuel ↓
- **38%** Medical
- **33%** Groceries
- **33%** Home Insurance



↑↓ Significantly higher/lower than 2018

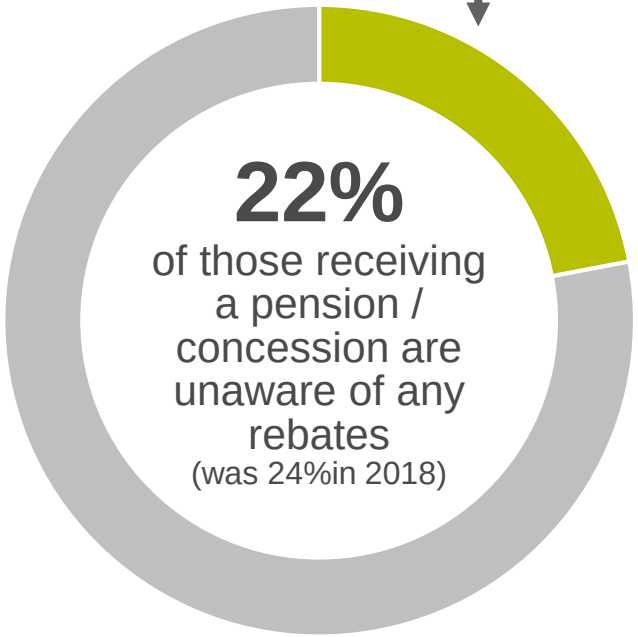
*Choice Consumer Pulse Survey: Australian' Attitudes To Cost Of Living 2015-2016, July 2016
I2A. How concerned are you about your ongoing ability to pay your electricity bill? Please mark on the 0-10 scale below where 0 means 'not at all concerned' and 10 means 'very concerned'?
I2B. And how concerned are you about your ongoing ability to pay the following bills / household costs? Please mark on the 0-10 scale below where 0 means 'not at all concerned' and 10 means 'very concerned'?
Base: Total Sample (n=4,536)

colmar brunton.

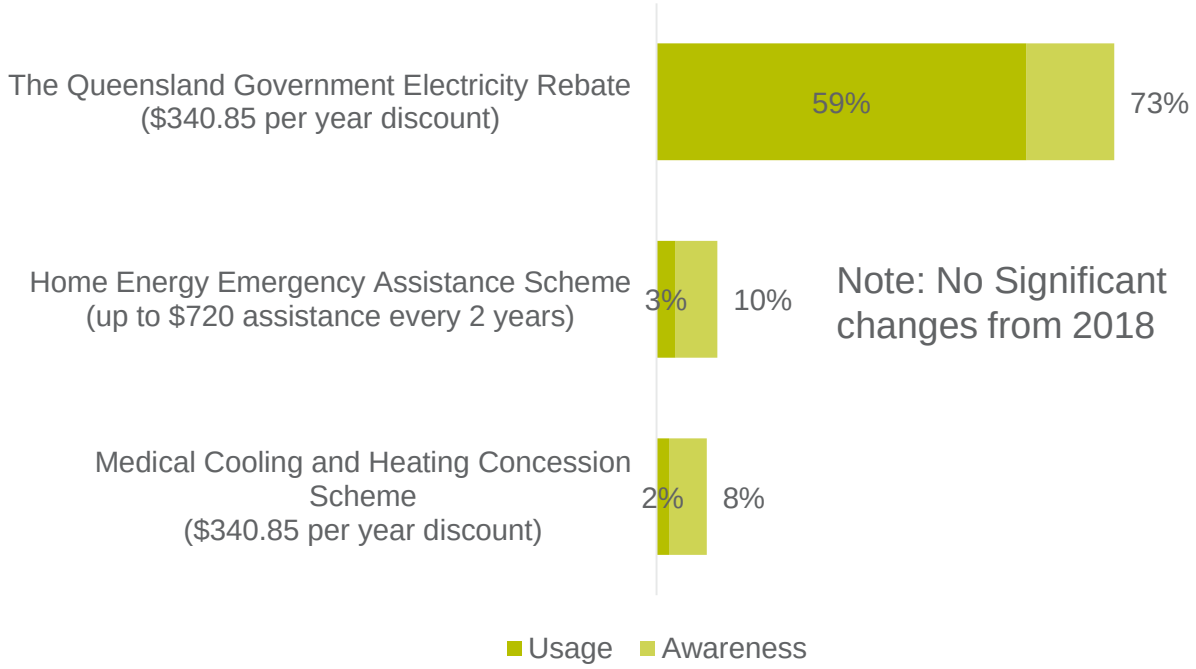
A little under a quarter of pension / concession households are unaware of any electricity rebates.

39%
receive pension / concession
(was 40% in 2018)

Pension or concession cards include:
- Pensioner Concession Card
- Queensland Seniors Card
- Commonwealth Health Care Card
- Department of Veterans' Affiars Gold Card
- ImmiCard (asylum seeker status)



Awareness & Usage Of Rebates Among Those Receiving A Pension / Concession

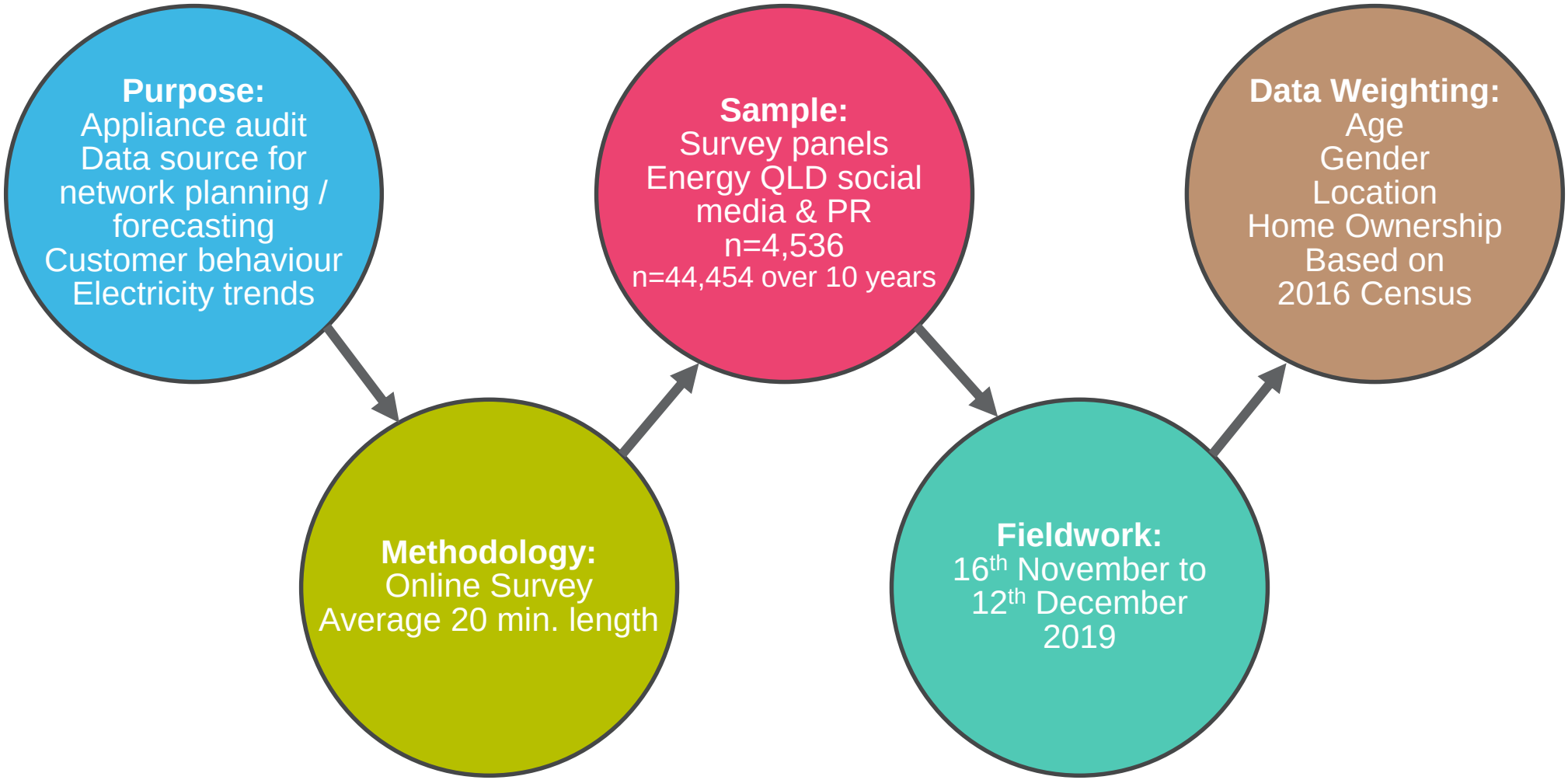


Note: No Significant changes from 2018

A12B. Do you have access to any of the following benefits – Pensioner Concession Card, Queensland Seniors Card, Commonwealth Health Care Card, Department of Veterans' Affairs Gold Card or an ImmiCard (asylum seeker status)?
A13. The Queensland Government provides various rebates on the cost of electricity to eligible customers. Which of the following rebates are you aware of?
A14. Which of the following electricity rebates do you currently have applied to your electricity account?
Base: Total Sample (n=4,536)

Research Methodology.

Background & Methodology.



Overall Research Design.

Data Weighting

To ensure the data was representative, all data was weighted to match the following ABS Census 2016 population statistics:


Age


Location (SA4)


Gender


Home Ownership

Research Locations

Region	Statistical Division	Sample in Each SD	Sample in Each Region
SEQ	Brisbane	862	**2396**
	Gold Coast	443	
	Ipswich	241	
	Logan – Beaudesert	241	
	Sunshine Coast	284	
	Moreton Bay	325	
Northern QLD	Cairns	383	**779**
	Townsville	396	
Central QLD	Mackay	188	**496**
	Fitzroy	308	
Outback QLD	Outback	48	**48**
Southern QLD	Darling Downs	152	**817**
	Toowoomba	228	
	Wide Bay	437	
TOTAL		**4536**