Understanding household barriers to residential solar and battery uptake and the potential for growth

May 2026

Australia's energy transition is reshaping how households source and use electricity. Rooftop solar is now on one in three homes. The Federal Government's Cheaper Home Batteries Program, launched in July 2025, has accelerated household battery uptake. However, access to these technologies is not evenly distributed across households. Understanding who can adopt these technologies – and who cannot – is critical for equitable policy and market design.

This report draws on Energy Consumers Australia's December 2025 Consumer Energy Report Card data to examine structural, financial and attitudinal barriers behind solar and battery adoption. To frame these findings, we applied the COM-B model, a well-established behavioural framework originally developed to understand and influence behaviour change.

The COM-B model[1] explains that for a behaviour to occur – in this case, adopting residential solar or batteries – households must have:

- **Capability:** the psychological and physical ability (knowledge, skills, confidence) to take action.
- **Opportunity:** the external physical and social conditions that make the behaviour possible.
- **Motivation:** the desire or incentive to act.

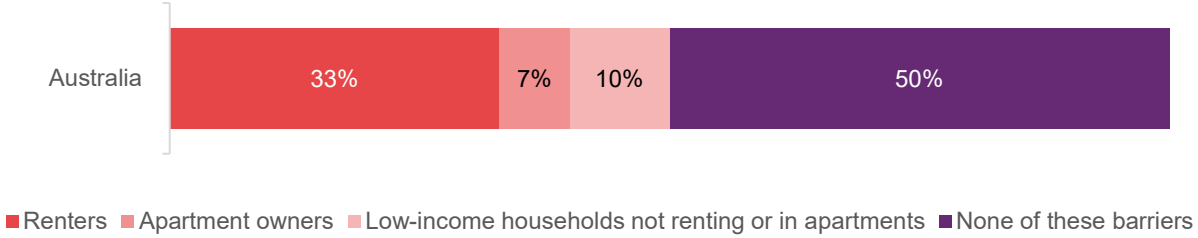
We test these relationships empirically using a logistic regression model of household ownership and interest in battery adoption[a]. Variables are selected as proxies for capability (knowledge and understanding of the energy transition and energy concepts), opportunity (housing type, tenure, and income), and motivation (engagement with energy technologies and energy needs).[b] Model details are provided in the Appendix. In the sections that follow, we draw on these results to examine how capability, opportunity, and motivation shape household decisions about adopting battery systems.

Opportunity: At least half of Australian households face structural barriers to adopt solar and batteries

Figure 1 shows that around half of Australian households may not have the opportunity to adopt solar or batteries because they face one or more barriers related to their housing situation or financial circumstances. These include living in a rental property, living in an apartment, or having a household income below $50,000.[c]

[a] Throughout the report, "interest in batteries" refers to households that are researching or considering buying a battery, while "no interest" refers to households that are not researching or considering a battery.
[b] We did not construct composite variables to represent capability, opportunity, and motivation. Instead, each variable (e.g. housing type) is entered individually into the model, and then grouped under these themes for interpretive purposes.
[c] For the remainder of this report, we refer to these three barriers as *structural barriers*.

Figure 1: Share of households facing one or more structural barriers to solar and battery adoption



Note: To avoid double counting, households are assigned to one barrier only based on a fixed classification order (renting, apartment dwelling, then low income). For example, a household that is both renting and low income is classified as renting.

Home ownership and dwelling type remain key factors in solar and battery adoption

The literature consistently shows that home ownership and dwelling type are key factors in whether a household can install rooftop solar.[2,3,4] Figure 2 shows that solar and battery ownership varies sharply by home ownership and dwelling type.

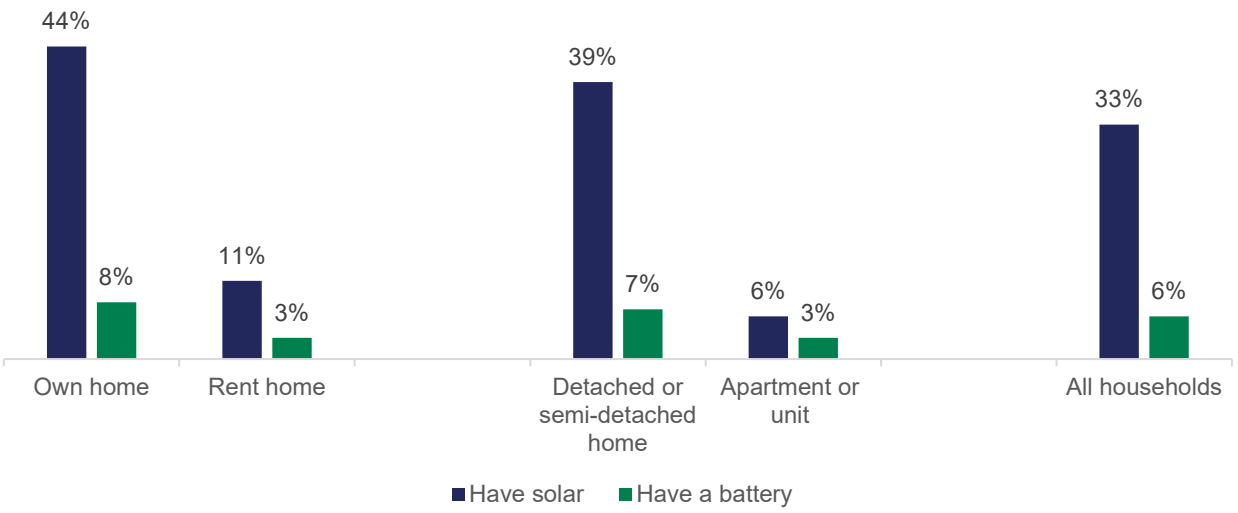
For renters, the main barrier is the split incentive problem, where landlords face the upfront costs of installation, while tenants receive most of the benefits.[5,6] This misalignment significantly limits solar uptake in rental properties.

For apartment residents, a major hurdle is that rooftops are typically common property managed by a strata body or body corporate, creating complex legal and governance barriers to individual installation. Furthermore, in high-rise buildings, the ratio of roof area to the number of apartments is often too low to provide meaningful energy to every unit.[7] Even among detached and semi-detached homes, solar potential can be severely limited by heritage overlays, suboptimal roof orientation, structural constraints, or age-related roof instability.[8,9]

Our model shows that home ownership and dwelling type are also significant predictors of battery adoption. This partly reflects similar structural barriers—such as split incentives and limited space—but also the strong link between solar and battery uptake. Because batteries are typically installed alongside or after solar systems, households that face barriers to installing solar are consequently much less likely to adopt batteries. The Cheaper Home Batteries Program is also only available for battery systems that are connected to new or existing solar installations.[10]

It is also noteworthy that around 15% of owner-occupied households that are not researching or considering a battery believe they have insufficient space to install one. We note that regulatory requirements that prohibit battery placement near bedrooms can further limit installation options for some homes, reducing the feasibility of safely accommodating a battery system.[11]

Figure 2: Rooftop solar and battery ownership by homeownership and dwelling type

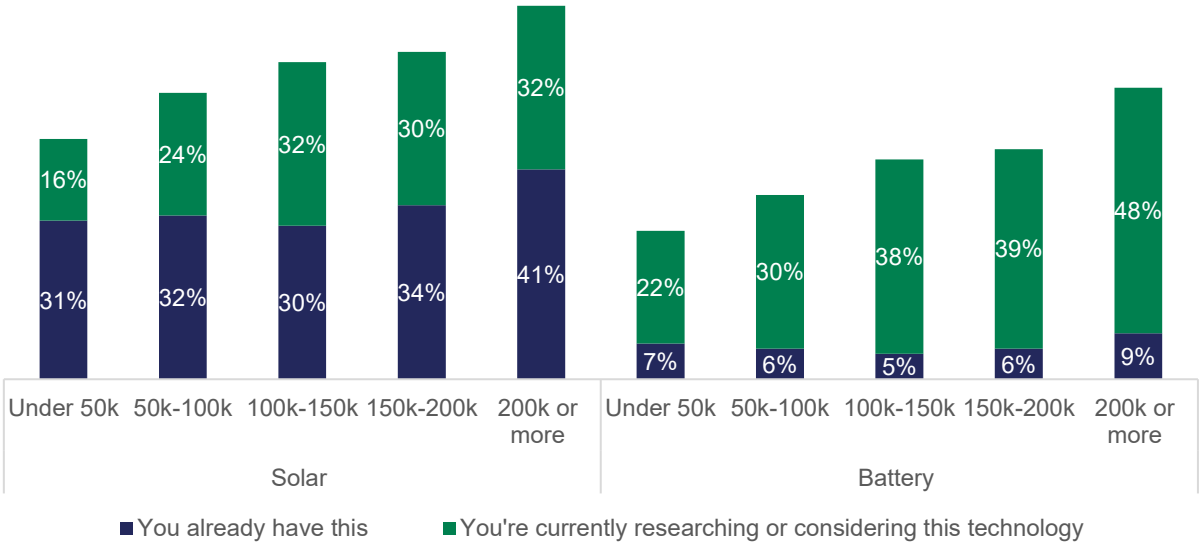


Higher income households are more likely to say they are interested in solar and batteries

In addition to barriers related to the type of home (renting, apartments), upfront costs remain a major obstacle to adopting solar and battery systems. Among owner-occupied households that are not researching or considering a battery, high upfront cost is cited as the primary barrier to uptake.

Figure 3 shows that households with higher incomes are more likely to be interested in solar and/or battery adoption. Only 43% of households in the $200,000 plus income group neither own, nor are considering battery, compared with 71% of households in the under $50,000 income group.

Figure 3: Current ownership and intention to adopt solar and battery by household income level



We note that affording upfront capital costs is shaped by more than income alone. Household wealth, savings and ongoing expenses also influence financial capacity. For example, two households with

similar incomes may have very different financial opportunities depending on their housing costs – for example, renters may have less disposable income than owner-occupiers without a mortgage.

Access to capital (such as savings or other assets) is also critical.[12] Many lower-income households with solar are retirees who, despite having relatively low current incomes, may have accumulated savings over time. These households likely had higher earnings during their working years, giving them more opportunity to invest in these technologies earlier in life. Retirees may also place greater value on ongoing cost savings and price certainty, given their reliance on fixed incomes.[13] This helps explain why solar ownership rates are high among retirees[14], despite their relatively low income.

Capability and motivation are also key, and often ignored, drivers of solar and battery adoption

Even among households with few structural barriers — such as homeowners in standalone dwellings – around half still do not have solar. This suggests other factors, such as capability and motivation, also play an important role.

Motivation: Financial returns and energy needs shape battery adoption decisions

For most households that own or are considering a battery, the primary motivation cited for adoption is to reduce electricity bills followed by reducing reliance on the grid, and securing backup power. But for households with low electricity consumption, a battery is often less financially attractive because the payback period is significantly longer.

ACCC data finds that in 2023-24, 25% of households in Victoria, New South Wales, South Australia and South East Queensland consume less than 2,681 kWh of grid electricity a year.[15] Even with a 30 c/kWh consumption charge, avoiding all 2,681 kWh would deliver annual savings of only around $840. For many households, these savings are unlikely to outweigh the significant upfront cost of a battery system over its expected life.

This helps explain patterns observed in our survey, where households with indicators of higher current or future electricity use – such as owning an EV, planning to transition off gas, or having children – are more likely to own or be interested in owning a battery.

Our survey shows that households with solar are also more likely to adopt or consider adopting a battery, as batteries enable them to store and use more of their self-generated electricity, improving the value of their solar system and reducing their reliance on the grid.

Reliability also plays an important role. Our survey shows that households that have experienced at least one power outage in the past six months are more likely to be interested in batteries, reflecting the value placed on backup power and energy security. Despite this, bill savings remain the main driver for battery adoption overall, even among households that have experienced at least one power outage in the past six months.

Motivation: Households who are interested in having an active relationship with the energy system are more likely to adopt batteries

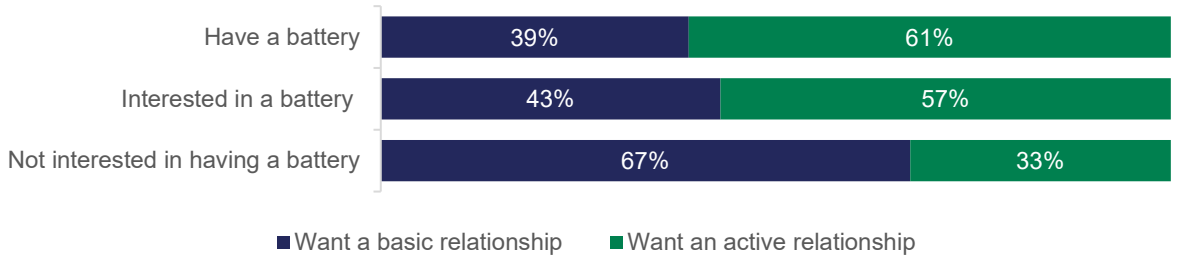
Beyond major motivations – such as cost savings, reducing reliance on the grid, and securing backup power – battery adoption also appears to be influenced by households' engagement with the energy system.

In our survey, we presented respondents with two types of energy-system relationships and asked which they preferred:

- A **basic relationship** focused on receiving a good price and a reliable electricity supply.
- An **active relationship** involving choosing between different tariffs, monitoring energy use, managing imports and exports, and selecting clean-energy options.

As shown in Figure 4, households who want a more hands-on role in managing their energy are far more likely to adopt or consider adopting a battery. That said, nearly 40% of households with a battery say they prefer a "basic" relationship with the energy system. This highlights the diversity of consumer preferences and attitudes.

Figure 4: Interest in type of relationship with energy system

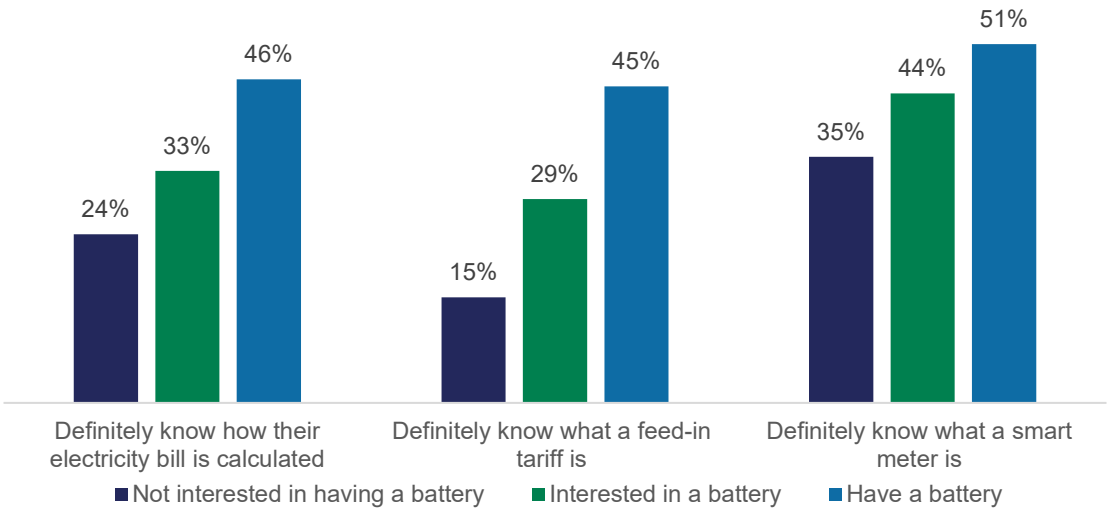


Capability: Higher level of energy knowledge is associated with interest in battery adoption

In the context of battery adoption, capability relates to households' broader energy knowledge and their understanding of how a battery works.

Figure 5 shows a clear relationship between energy knowledge and both ownership of – and interest in – battery systems. For example, 46% of battery owners say they definitely know how their electricity bill is calculated, compared to only 24% that are not interested in a battery. Similar patterns appear for knowledge of feed-in tariffs and smart meters.

Figure 5: Understanding of energy concepts among different household groups



Capability: Households who understand the transition to renewable energy are more likely to adopt batteries

Households that strongly agree they understand why Australia is transitioning to clean energy, are interested in national transition plans, and know what they personally can do to reduce their household's emissions are more likely to own – or be considering – a battery. For example, for households not interested in a battery, only 9% strongly agree that they know how to reduce their household's carbon emissions, compared with 22% of current battery owners.

Unlocking the opportunity

Combined, our findings suggest that almost half of Australian households face at least one structural barrier to solar and battery adoption. However, that does not mean they are fully locked out. In our data, 18% of households with at least one structural barrier currently have solar, compared with 47% of households that face none of these barriers.

Renters account for the largest share of households facing these barriers – around two-thirds of them. This is contributing to a widening divide between renters and owner-occupiers in access to solar and batteries. Among Australian households currently without solar, almost half are renters.

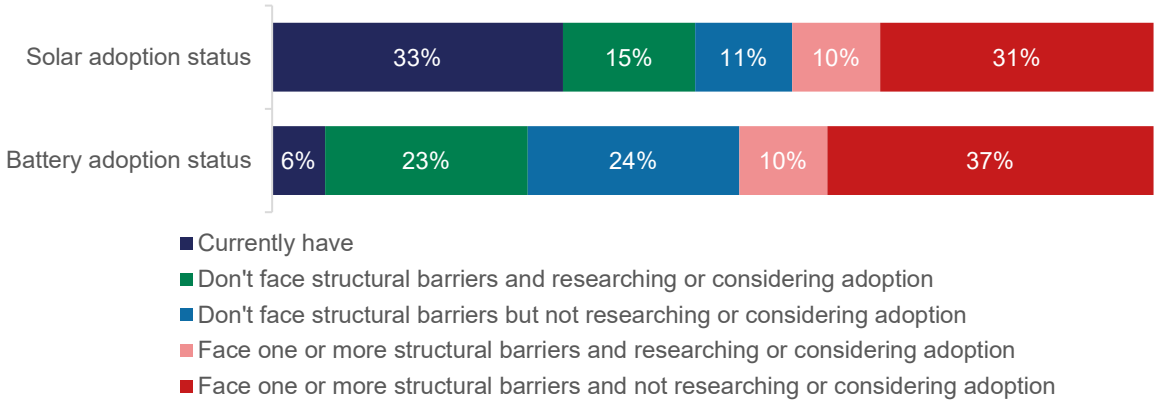
However, access to solar and batteries can change as people move homes and as housing stock turns over, or as more landlords choose to install solar and battery systems. Among Australian households currently with solar, 11% are renters. Of these renters, around 60% say they were not involved in the installation decision, indicating that the system was installed previously by the landlord and the household simply rented a property that already had solar.

Many households remain interested in getting solar and batteries

Figure 6 shows that there is still a large opportunity for growth in household solar and battery uptake. Notably, 15% of homes don't face any of the three structural barriers and say they are considering or researching getting solar panels. Similarly, 23% of homes face none of the three structural barriers and are interested in getting a battery. This aligns with findings from the Solar Potential of Australian Housing Stock study, which highlights the significant untapped rooftop solar potential across Australia's housing stock.[16]

Our survey also shows that among households with solar, 16% already have a battery and a further 47% are researching or considering one – providing additional evidence that battery adoption can grow substantially.

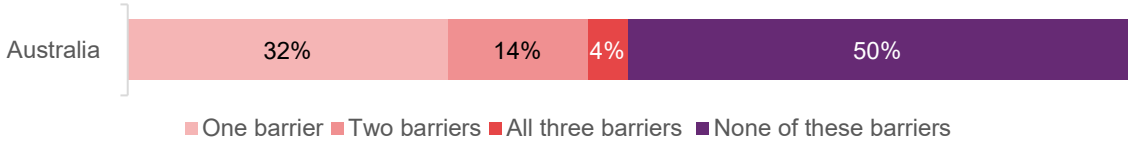
Figure 6: Distribution of solar and battery ownership, interest, and barriers among households



Many households face only one structural barrier

Although we estimate that around half of all households face at least one structural barrier, many households may still have some opportunity to adopt solar or batteries if the right support, incentives, or regulatory settings are in place. Figure 7 shows that only 4% of households face all three structural barriers simultaneously, meaning they live in a rental property, in an apartment, and have an annual income below $50,000. A much larger portion (32%) face just one structural barrier, whether that is renting, living in an apartment, or having a lower income, which means they might still be able to adopt with targeted assistance or tailored program design.

Figure 7: Share of households facing one or more structural barriers (renting, apartment dwelling, and/or low income) to solar and battery adoption



For example, 21% of all households live in rental properties but in detached or semi-detached dwellings, and around 8% have low incomes but own their own detached or semi-detached homes. These groups may still be able to adopt solar or batteries under the right circumstances, suggesting that the potential market is larger than it first appears.

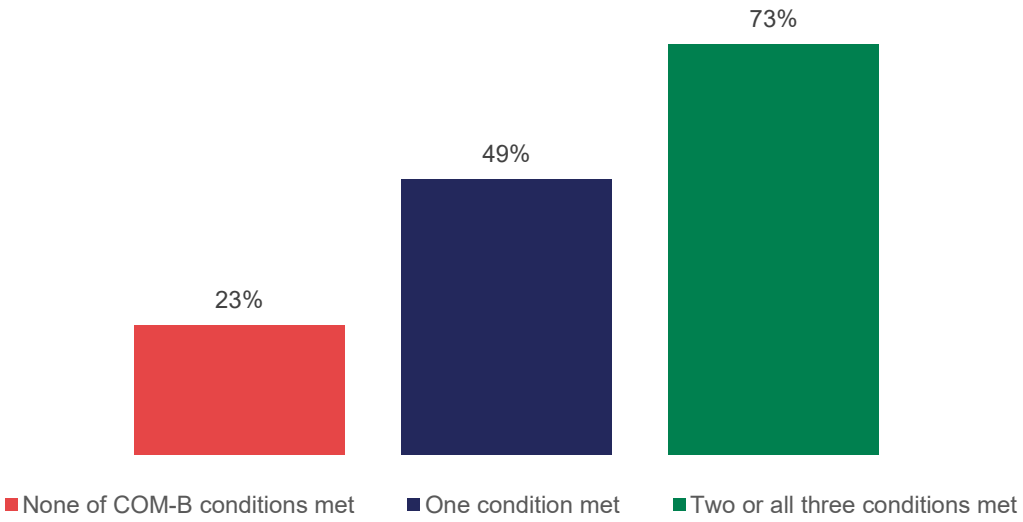
Figure 6 shows that around 10% of homes say they are researching or considering solar or batteries, but face at least one of the structural barriers. Reducing those barriers – through rental and strata reform and targeted financial support – could unlock substantial additional demand and move Australia closer to an energy transition that works for everyone.

Capability and motivation remain key drivers of, or barriers to, solar and battery adoption

As highlighted earlier, capability and motivation also play an important role in adoption. Among households without structural barriers, those considering batteries (23%) differ clearly from those not considering them (24%). Households that are considering adoption are twice as likely to want an active relationship with the energy system (60% compared to 30%). They are also more likely to understand why Australia is transitioning to clean energy and what actions they can take to reduce their household emissions.

Figure 8 brings these factors together by showing how battery adoption increases as more of the COM-B conditions are met. Only 23% of households that meet none of the capability, opportunity, or motivation criteria report having or considering a battery. This rises to 49% when one condition is met and reaches 73% when two or all three conditions are met. This pattern shows that adoption is not driven by any single factor, but by the combined effect of capability, opportunity, and motivation.

Figure 8: Share of households with or interested in having a battery, by number of capability, opportunity, and motivation conditions met



Note: For this figure, households are classified as meeting each COM-B condition only when they satisfy all variables associated with that category (e.g., all capability indicators, all opportunity indicators, etc.). The complete list of variables is provided in the Appendix. For example, a household is considered to have opportunity if it does not live in a rental property or apartment and has an income above $50,000. This strict definition represents an extreme case and is used to illustrate how outcomes change when all enabling conditions are in place. It is not intended to imply that every factor must be met in practice for adoption to occur.

Appendix

The table below presents the results of logistic regression models used to estimate the factors associated with household interest in battery and solar adoption (currently own or be interested).

		Battery adoption		Solar adoption	
Category	**Variable**	**Coefficient**	**p-value**	**Coefficient**	**p-value**
	Intercept	-2.767	0.000	-2.587	0.000
Opportunity	House type (reference: apartment)				
	• Detached/semidetached home	0.443	0.000	1.288	0.000
	• Other	0.646	0.000	1.550	0.000
	Income (reference: under 50k)				
	• 50k–100k	0.311	0.004	0.313	0.003
	• 100k–150k	0.511	0.000	0.368	0.001
	• 150k-200k	0.527	0.000	0.364	0.007
	• 200k or more	0.849	0.000	0.578	0.000
	Home ownership (reference: rent)				
	• Own	0.500	0.000	1.146	0.000
	• Other	-0.281	0.312	0.616	0.116
Motivation[d]	Have solar	1.118	0.000	-	-
	Have an EV	1.602	0.000	1.688	0.000
	Have no plans to cancel gas	-0.508	0.000	-0.296	0.000
	Have a child living at home	0.314	0.000	0.293	0.000
	Have experienced at least one outage last six months	0.345	0.000	0.339	0.000
	Want an active relationship with energy system	0.803	0.000	0.583	0.000
Capability	Understand how to reduce their HH carbon emission	0.295	0.000	0.284	0.000
	Understand why Australia is transitioning to clean energy	0.241	0.003	0.238	0.000
	Definitely know what a feed-in tariff is	0.304	0.000	0.862	0.000
Model fit	Pseudo R^2	0.1894		0.1995	
	Log-Likelihood	-2502.0		-2433.3	

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[d] It is important to note that having an EV or solar is grouped under motivation in this analysis; however, these variables may also reflect capability. Households with these technologies are likely to have greater familiarity with energy technologies, a better understanding of how they work, and higher confidence in engaging with them.

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