EXECUTIVE SUMMARY

An Energy Rating Icon can improve the energy efficiency of consumer choices online

A summary of the research findings

The Australian Government Department of the Environment and Energy commissioned research to understand how the display of energy rating information in the online retail environment influences the average energy efficiency choices of certain appliances purchased online. The findings of the research will contribute to ongoing consideration of whether appliances offered for sale online should be required to display energy rating information and if so, in what form.

Currently consumers shopping in traditional 'bricks and mortar' stores can see the energy rating label on appliances, and this prompts them to factor energy efficiency into their purchasing decisions. However, the legislation which compels retailers to display the label in-store, the *Greenhouse and Energy Minimum Standards Act 2012* (GEMS), applies only to physical products and not to 'virtual products' displayed for sale online. Consequently, consumers are much less likely to see energy rating information when purchasing or researching a potential purchase online and may not factor energy efficiency into their purchase decisions to the same extent as when shopping offline.

The research focused on the online retail environment to understand:

1. If people exposed to energy rating information choose more energy efficient products than those who are not;
2. if energy rating information in the form of an image (the icon) is more effective than text/words;
3. at what point in the online purchase journey energy rating information has the biggest effect on the energy efficiency of the product ultimately chosen (i.e. at the shortlisting or at the final choice stage).
4. whether the simplified version of the Energy Rating Label (the Energy Rating Icon) is understood.

METHOD

An online survey was conducted within Australia in February 2018 with a sample size of 4,818 participants. Participants were screened to ensure they were between 21 and 61 years of age, were residents or citizens of Australia, and were the key decision makers in purchasing electrical appliances in their household. All participants had used the internet within the three months prior to the survey.

The two part survey involved a virtual online shopping experiment and a questionnaire. The experiment was conducted first to ensure participants were not exposed to or biased in their responses to later questions relating to energy ratings and the icon.

The experiment asked participants to imagine they were looking to buy a bottom mount refrigerator (i.e. with a freezer compartment at the bottom) for their home in an online store. The online store was designed to mimic those used in 'real life' and the two key stages people use when making online purchasing decisions for major household appliances—the 'consideration' stage where people narrow down the product alternatives to a few options followed by the second and final purchasing stage where they make their choice. The online store was built with all the common features, including filters to sort by price, volume, brand, colour, energy rating and kWh.

Participants were first asked to shortlist between two and five fridges from a menu of 56 fridges with different brands, features, energy ratings, prices, popularity and reviews indicated. The fridges offered were drawn from 145 fridges found in the Australian online market during the survey period. Actual fridges from the market were used so that the energy rating of the fridges was known to the research team for the analysis, even when no energy rating information was presented to the participants in the online store for the experiment.

Once participants made their shortlist at the consideration stage, they were asked to use their shortlist to choose the fridge they would buy for their household if they had to choose one on that day.

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The impact of having energy rating information present (or not) at the consideration and/or choice stages, along with the way the information was presented (e.g. as text or as an icon) was tested with participants across six groups. Participants were randomly allocated to one of six equal-sized groups. The key demographic profiles for each group were monitored to ensure there were no sample skews that could impact the results between sample groups. The following summarises the six sample groups.

Sample groups	Consideration stage	Choice stage
1 (control group)	No energy rating information	No energy rating information
2	No energy rating information	Energy rating in text e.g. Energy rating: 3.5 stars out of 6, 246
3	No energy rating information	Energy Rating Icon 
4	Energy rating in text e.g. Energy rating: 3.5 stars out of 6, 246	Energy rating in text e.g. Energy rating: 3.5 stars out of 6, 246
5	Energy rating in text e.g. Energy rating: 3.5 stars out of 6, 246	Energy Rating Icon 
6	Energy Rating Icon 	Energy Rating Icon 

The questionnaire that followed the experiment assessed: understanding of the Energy Rating Icon; the effect of the addition of kilowatt hours (kWh) information to the icon and any preference for its addition; the size and location of the icon if it were to be effective; awareness of the Energy Rating Label used in bricks and mortar stores; participants' online purchasing behaviours; buying factors and attitudes to household electrical appliances and energy efficiency; whether they have a home solar energy system; their attitudes towards the environment; and their disposition to environmentally friendly behaviours.

KEY FINDINGS

1. People who are exposed to energy rating information choose more energy efficient products

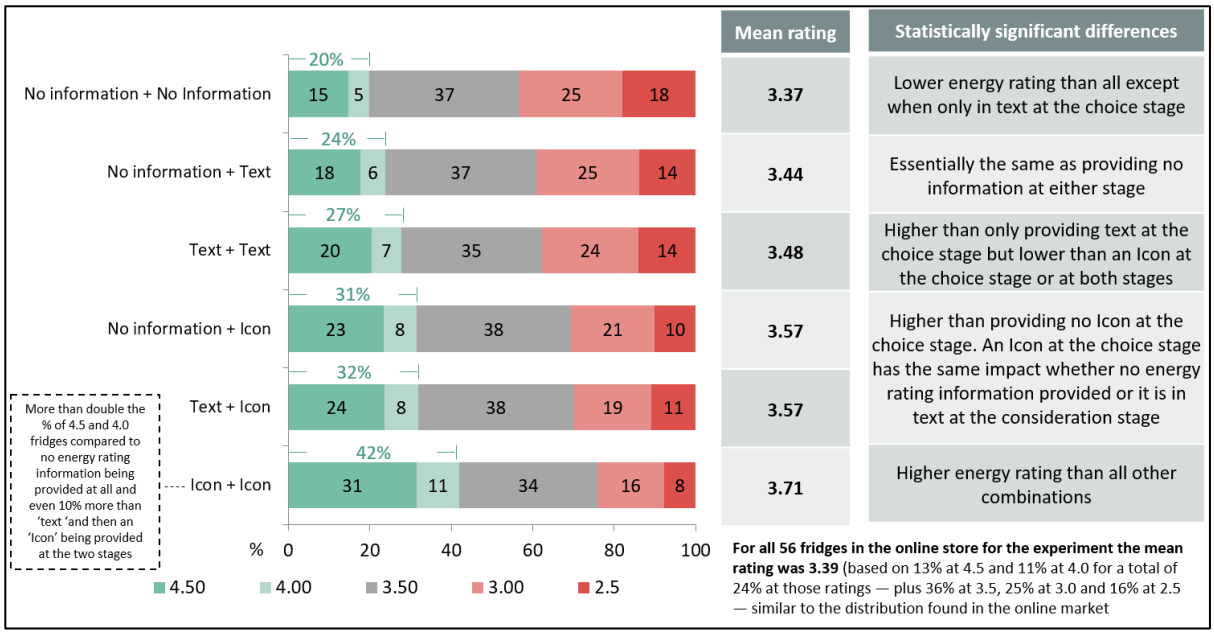
If no energy rating information was provided at the consideration stage, only 9% selected fridges rated four stars or more with an average rating of 3.33. If the energy rating information was shown in text only, 14% select fridges of four stars or more, with an average rating of 3.39. However, this was not statistically higher than if no information was provided.

By contrast, 31% of those who were exposed to the Energy Rating Icon at the consideration stage selected fridges rated four stars or more, with an average rating of 3.58 (0.25 higher than no information and 0.19 higher than in text). This was statistically higher than if no information was shown (with 22% more selecting fridges with four stars or more) and if text was shown (with 17% more selecting four stars or more).

Similarly, participants who were exposed to energy rating information at the choice stage also selected a more efficient fridge than those who were provided no information.

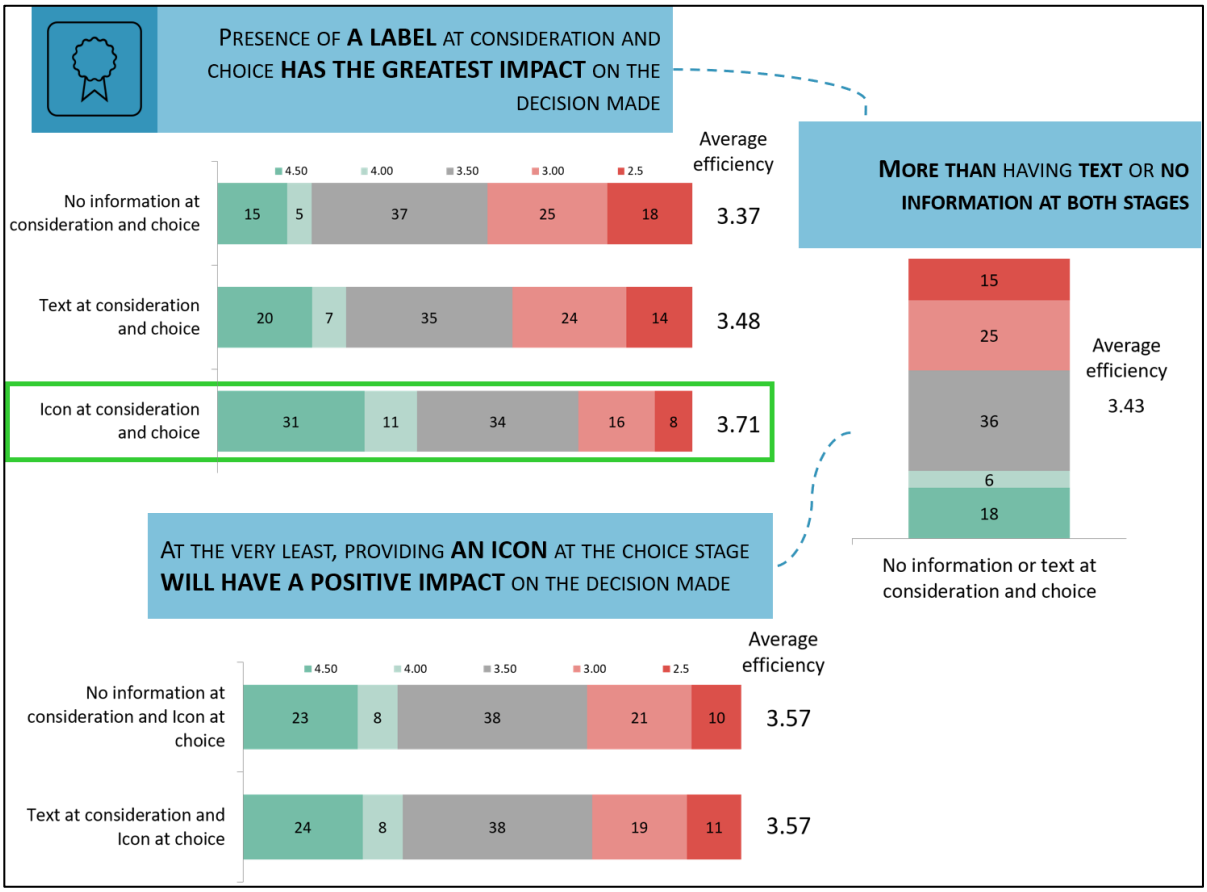
When just looking at the choice stage in isolation, if no energy rating information was provided, only 20% selected a fridge rated four stars or more, with an average rating of 3.37. When the information was provided as text, 26% of participants selected a fridge of four stars or more, with an average rating of 3.46 (statistically higher than having no information). If the information was shown as an icon, 35% selected a fridge rated four stars or more, with an average rating of 3.62 (0.25 higher than no information and 0.16 higher than in text). This was statistically higher than if no information was shown (with 15% more selecting fridges with four stars or more) and if text was shown (with 9% more selecting four stars or more).

The combined impact of the presence or not of energy rating information and the form in which it is presented at both the consideration and choice stages on the energy efficiency of the final fridge selected is summarised in the figure on the next page.



2. The Energy Rating Icon is more effective than text only AND especially when shown at both stages

The figure below further illustrates the positive impact of an Energy Rating Icon in the decision making process and on the energy efficiency of the product ultimately chosen compared to energy information provided in text.



3. The simplified version of the Energy Rating Label (the Energy Rating Icon) is generally understood

The survey's cognitive testing results suggest that nearly everyone is familiar with the Energy Rating Label used in bricks and mortar stores. It also found that while most people did not fully understand the technical intricacies of the Energy Rating Icon for different types of fridges, the concept of more stars equals a more efficient fridge was well understood with its three visual indicators (the stars, the number and the red fill).

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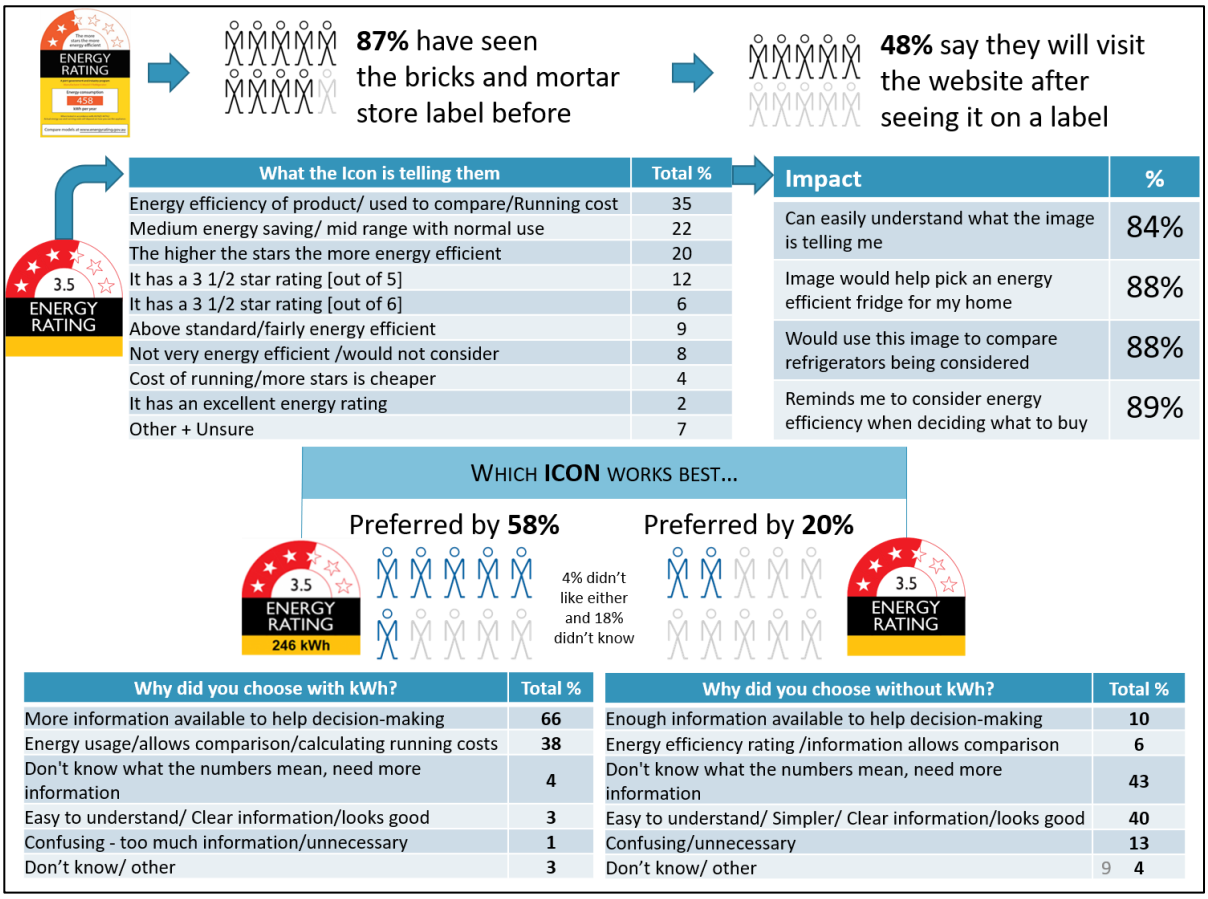
Although few understood kWh, those who did used it to calculate the energy cost. Others valued its inclusion as another objective comparison between products because they understood the lower the kWh the better. This is confirmed in the survey results summarised below.



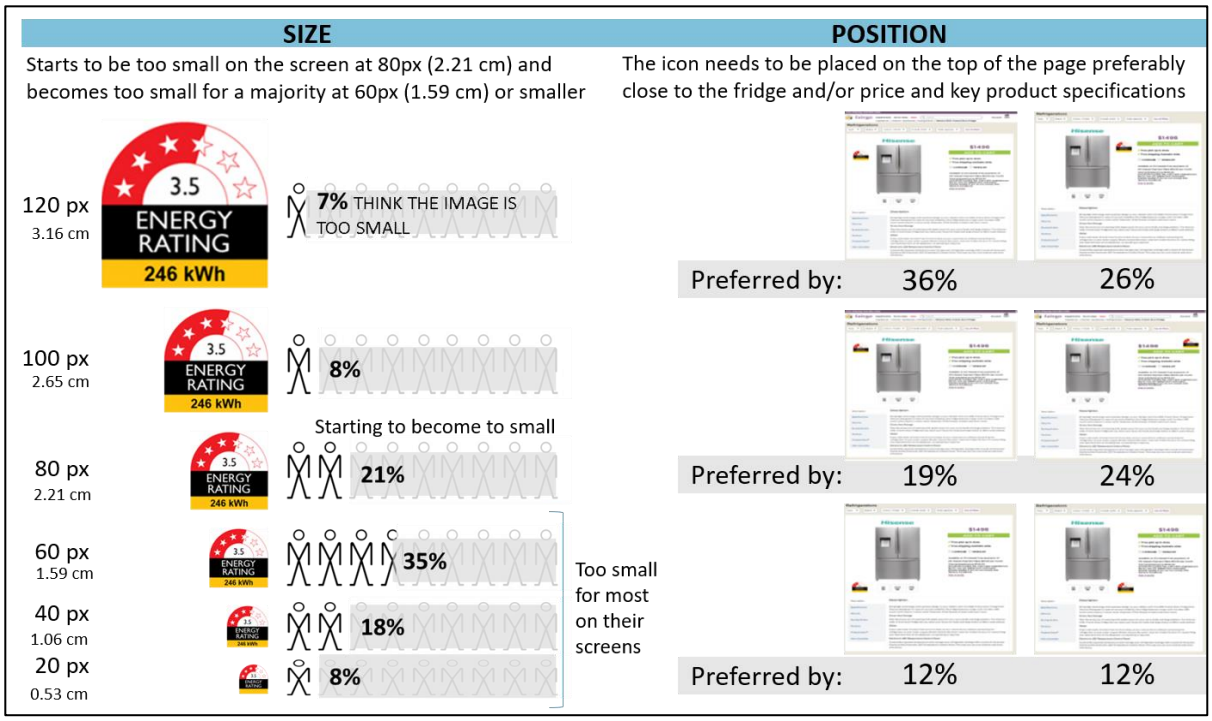
What the Icon is telling them	Total %
Energy efficiency of product/ used to compare/Running cost	35
Medium energy saving/ mid range with normal use	22
The higher the stars the more energy efficient	20
It has a 3 1/2 star rating [out of 5]	12
It has a 3 1/2 star rating [out of 6]	6
Above standard/fairly energy efficient	9
Not very energy efficient /would not consider	8
Cost of running/more stars is cheaper	4
It has an excellent energy rating	2
Other + Unsure	7

Impact	%
Can easily understand what the image is telling me	84%
Image would help pick an energy efficient fridge for my home	88%
Would use this image to compare refrigerators being considered	88%
Reminds me to consider energy efficiency when deciding what to buy	89%

Why did you choose with kWh?	Total %
More information available to help decision-making	66
Energy usage/allows comparison/calculating running costs	38
Don't know what the numbers mean, need more information	4
Easy to understand/ Clear information/looks good	3
Confusing - too much information/unnecessary	1
Don't know/ other	3

Why did you choose without kWh?	Total %
Enough information available to help decision-making	10
Energy efficiency rating /information allows comparison	6
Don't know what the numbers mean, need more information	43
Easy to understand/ Simpler/ Clear information/looks good	40
Confusing/unnecessary	13
Don't know/ other	4

The study also explored the effect of the size and position of the icon on a product page.



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4. Some other research findings

An analysis of the fridge shortlisting and final purchasing choices in the experiment against attitudinal and behavioural responses from the survey indicated a positive relationship between higher education and income and fridges with higher energy ratings, and a negative relationship in relation to males and younger consumers (21-34 years). The profiles of participants based on the energy rating of the fridges shortlisted and chosen have been provided in the full report.

Despite an analysis of the 145 fridges found in the Australian online market and the menu of 56 included in the online experiment showing no direct or a weak negative correlation respectively between the price of fridges and their star rating, it was identified that when the Energy Rating Icon was shown to participants it did result on average in higher priced fridges being shortlisted and ultimately chosen.

Almost one in five (19%) of participants used the different filters provided in the experiments virtual online store. One in ten participants filtered by energy rating and 1% by kWh, compared to 19% filtering by price range, 18% by volume, 16% by colour and 8% by brand.

While most participants believed their behaviours had an impact on the environment (79%) and were concerned about the environment (79%), the survey results suggest that only sustainable behaviours that are easy to follow and do not have a major cost or have a financial benefit are likely to be adopted. At the same time, although 87% of participants indicated it was a good idea to buy appliances that were energy-efficient, and 79% believed it was normal to consider energy-efficiency while purchasing appliances and that energy efficient appliances can contribute to cost savings, there was not a strong correlation between the energy rating of the fridges shortlisted and chosen and the sustainable intentions and behaviour of participants. This suggests cost savings are a stronger driver and this was also suggested in the qualitative interviews for the cognitive testing.

Price and size/capacity appear to be the main factors when purchasing household electrical appliances. Energy efficiency was rated as being the third most important factor when choosing a fridge or a washing machine, but fourth when buying a television, which suggests there could potentially be some variation in the impact of an Energy Rating Icon in the decision making process depending on the type of appliance.

ADDITIONAL WORK

Some thoughts on potential future research to build in the findings from this study include:

1. Testing if the same effect occurs with other appliances, where there are different levels of engagement and key buying factors (e.g. washing machine or dryer or dishwasher or television).

2. Exploring and testing whether a simple icon without the kWh could be more effective in the online environment despite the findings of this study (given some other research has indicated that the simpler and less cluttered the icon the better and with questions around consumer understanding and use of kWh); or if the added information of kWh or other features (e.g. in the more comprehensive bricks and mortar Energy Rating Label or online calculators and comparisons) would improve the Icon value and impact online.

3. With the significant and continuing growth in households with their own energy generation, specifically investigating dynamics and if other drivers, attitudes and behaviours exist towards energy efficiency and household electrical appliances in these situations.

4. Testing to confirm if there is a relationship between the presence of the icon and higher priced fridges on average being shortlisted and ultimately chosen — and exploring whether an online store that displays the Energy Rating Icon with its products is preferred by consumers over one that does not.