



ARBN: F00124551 (formerly Artcraft Research), a division of Winton Sustainable Research Strategies Pty Limited (formerly Artcraft Studios of Australia Pty Ltd) ABN 47 002 306 381

Sydney:

202A Fullers Road Chatswood
NSW 2067 Australia
Phone: +61 (0)2 9413 1233
Mobile: +61 (0)414 504 832
1800 645 167
Email: leswinton@bigpond.com
Internet: www.wintonsrs.com.au

Canberra:

Suite 17 Level 1 Manuka Arcade
20 Franklin St Manuka ACT 2603
Phone: +61 (0)2 6232 6264

Towards a 10-Star Energy Efficiency Rating System for Major Household Appliances

Final Report

**on a Series of Focus Group Discussions
in Australia and New Zealand**

Conducted for the

**Department of the Environment,
Water, Heritage and the Arts**

8 May 2008

Table of Contents

	<u>Page</u>
Executive Summary	1
1. Introduction.....	5
2. The Study Findings.....	6
2.1 Overview.....	6
2.2 Views on the Current Labels:	7
2.3 The Context for Change:	9
2.4 Reactions to 10-Star Versions of the Current Label:	10
2.5 Extending the Mandatory 6-Star Label with a Voluntary Aspect to Produce a 10-Star Rating System:	12
2.6 Conclusions and Outcomes.....	20
Appendix 1: Images of Trialled Label Mock-ups.....	22
Appendix 2: Extracts from Enquiry into the Victorian Energy Services Industry	30
Appendix 3: Media Statement from Peter Garrett - 6th August 2007.....	31
Appendix 4: Array of Labels from 1-Star to 10-Star	32

Executive Summary

A. Context:

The Department of the Environment, Water, Heritage and the Arts commissioned Winton Sustainable Research Strategies Pty Limited to explore with representatives drawn from stakeholder groups whether a 10-star rating scheme would improve the current mandatory energy efficiency labelling scheme. The scheme has long used a 6-star format to communicate the energy efficiency of selected consumer appliances.

This report records the recommendations derived from a series of focus group discussions and in-depth interviews conducted in Australia and New Zealand with consumers, appliance manufacturer or importers and appliance retailers from late January to late April 2008. Nine focus groups were held at regular intervals over that time in Sydney, Melbourne and Wellington examining many options before settling on the proposals identified in this report.

The research evaluates the impact and effectiveness of the current 6-star appliance energy efficiency rating label, demonstrates how a 10-star scheme can improve the existing scheme and establishes how to transition toward a 10-star appliance rating system for appliances.

During the research various label concepts were developed, and on the basis of testing, either discarded or revised. Appendix 1 includes some of those discarded options.

B. Findings:

The current label works well, but progress is now essential:

After 20 years of promotion, community awareness of the appliance energy labels is almost universal, with most consumers having a good understanding of the basic concepts and features.

- Most maintained that they have acted on the label in real appliance purchase decisions, usually as one of the final arbiters after they have weighed up practical considerations and compiled a short list of models from which to choose.
- Almost all are aware that more stars mean greater energy efficiency, and half stars are clearly recognised and understood.
- Almost all refer to the stars in their purchase process (almost always before the numbers), and they like the graphical depiction. They see the stars as a fun concept that also communicates a simple and important environmental message.
- With a 6-star label, consumers do not read the number of stars or half stars, they tend to recognise the rating in its entirety – they intuit or subitize¹ the rating, without (consciously) counting each star.
- Most people also refer to the numbers (energy consumption figure), and while they may be unclear as to precisely what the numbers represent, most do understand that the larger the number, the more energy that appliance consumes and/or the more it will cost to run.

¹ The term 'subitizing', coined in 1949 by E L Kaufman et al, refers to the rapid, accurate, and confident judgments of number performed for small numbers of items. The term is derived from the Latin adjective *subitus* (meaning sudden) and captures a feeling of **immediately knowing** how many items lie within the visual scene. The accuracy, speed, and confidence with which people can subitize or intuit the number of items declines exponentially above 4 or 5 items. [Kaufman, E. L., Lord, M. W., Reese, T. W., & Volkman, J (1949). "The discrimination of visual number". *American Journal of Psychology* 62: 498-525]

As with all whitegoods in the late 1990s, and as with refrigerators and air-conditioners now, advances in technology result in improved energy-efficiency. Over time, technology improvement means many models then bunch near the top of the star rating label limiting the visual variation between models. The star rating indices (SRIs) for some of these models may even exceed six stars, but the label only allows six stars to be displayed.

- To address this issue, government and industry agreed to develop new star rating algorithms that scale everything back by several stars. First undertaken in 2000, this rescaling process worked well. After a transitional period where both the old and new label appeared on display stock, consumers accepted the change because extensive consultation was undertaken. The process of agreement took several years and involved significant planning and other resources but achieving consensus took longer than first thought.
- As a result, some models in most appliance categories were eligible for more than six stars under the current algorithms but this efficiency advantage could not be communicated to consumers. Most consumers tend to assume that six stars is the maximum rating possible for an appliance, a few even assuming that a six star rating implies that an appliance is 100% efficient (eg, 'because that's the maximum there is').
- When the possibility of models scoring more than six stars is discussed with consumers in focus groups, many are unconcerned, assuming (perhaps incorrectly) that such models are likely to be beyond their budget. However, a growing number feel that this information ought to be readily available.
- Industry too has not had a ready vehicle to communicate efficiency information. There have long been reports of manufacturers not taking advantage of all possible technological advances available to them because the current star rating system could not recognise and reward those products with more than six stars. This paper records one of the most often reported 'stories'. (See Appendix 2)
- This historical limitation continues today with several industry members participating in this round of focus groups indicating (privately and confidentially) that they have delayed manufacturer, import or release of models that would have achieved an SRI of more than six stars because consumers would not know and competitors may gain insights into hard-won technological breakthroughs by reverse engineering those models.

Stories of suppliers not releasing their most efficient products because of labelling limitations have circulated for years. In a media statement on 6 August 2007 by Peter Garrett (then opposition spokesman and now Federal Minister for the Environment portfolio), stated that: *"A Rudd Labor Government will give energy efficiency a higher priority with a new 10-star appliance rating system and higher standards for appliances. ... (It) will work with industry, States and Territories to (inter alia) improve the six-star Energy Rating Label scheme so that up to ten stars could be awarded to an expanded list of products, including TVs. This would give manufacturers incentives to continually improve their products and give consumers more accurate information to help with their choices."* (See Appendix 3 for full text of statement).

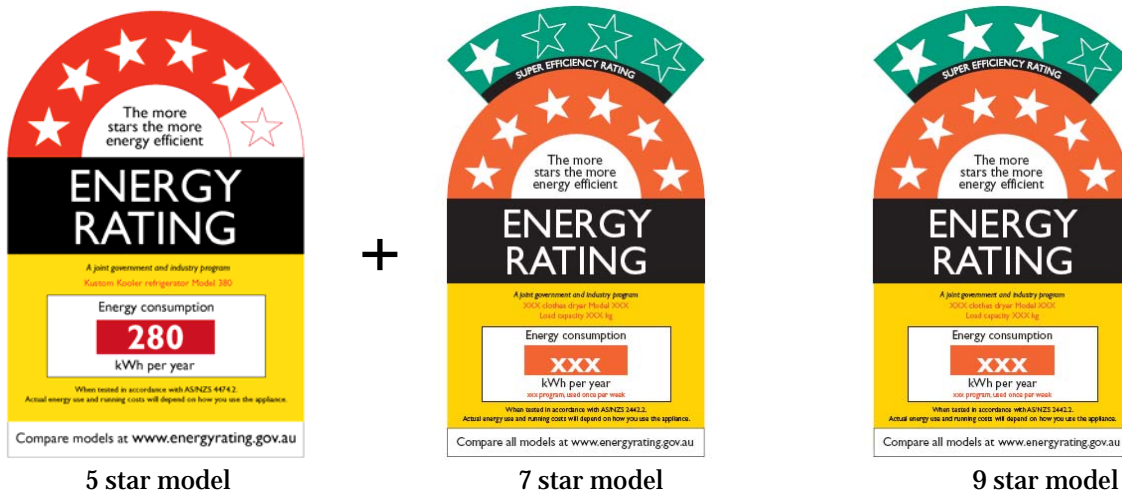
The Department commissioned this set of focus groups discussions to test these propositions.

The proposed new 10-star labelling system must build on the current system:

After several decades of consistent exposure on all labelled appliance models in all showrooms (and promotion and education from time to time in some jurisdictions), the appeal and effectiveness of the current 6-star appliance label has been well-established.

All stakeholders and especially government agencies with ownership of the intellectual property of the energy efficiency label wanted to ensure any change would benefit all and would not confuse the community whose understanding of the current labelling information is very strong. Government agencies would only countenance change if it built on and strengthened this legacy.

- After extensive qualitative research (focus groups and in-depth interviews) among consumers and industry in Australia and New Zealand, the research concludes that moving all labels to a mandatory 10-star label format replacing the well-understood mandatory 6-star label would pose considerable risks in terms of its acceptance, impact and effectiveness among both consumers and the appliance industry. This option is not recommended.
- For product rating 1-6 stars, the focus groups recorded very strong support to retain the tried and trusted 6-star format.
- However, the research also found that a 10-star format has several unique positive features:
 - It would enable manufacturers to identify clearly and effectively those models which exceed 6 stars;
 - It would enable consumers to immediately identify the “best in category” products and by building on the familiar 6-star format lessen confusion in consumers minds about this ‘endorsement’ by both Government and industry of these super efficient products;
 - It would enable government agencies to manage the transition between labelling schemes where technology improvement leads to bunching as described earlier.
- Therefore, for product with a rating between 7 – 10 stars under revised algorithms, the research found that consumers, suppliers and retailers all favoured a new 10-star format for super-efficient appliances. The final version of the 10-star label uses a version of the familiar label with a second arch to highlight in green the additional star(s) earned by that model in excess of the basic six stars.



- For only these super efficient products, this approach clearly appealed to both consumers and industry, in terms of familiarity (builds on the existing label), relevance (conveys an important message), and motivation (highlights the best models in terms of energy efficiency).
- The research found no reasons why the new scheme of two complementary labels in the formats recorded in this report should not commence as soon as the technical logistics, adequate notice and a transition strategy are settled with stakeholders.

Consumer education and research will enhance the transition process:

While the focus group research suggests that many consumers will be able to fathom fairly quickly the meaning of the extra arch of stars, some confusion associated with this change will inevitably occur. Government and industry groups must maintain the past partnership and develop a clear explanation of the purpose of the new system and how to interpret the 10-star format. As the super efficient products will take some time to appear, there is time for all the parties to develop a common plan and communication strategy.

To achieve this, an ongoing consumer education program is recommended, accompanied by a retailer education program. A program of research involving both consumers and industry should be mounted to underpin the new 10-star rating system, initially guiding its development, then measuring its effectiveness.

1. Introduction

The Government has indicated that the use of a 10-star label approach should be pursued in communicating energy efficiency. The Department of the Environment, Water, Heritage and the Arts commissioned Winton Sustainable Research Strategies Pty Limited (WSRS) to conduct a series of focus group discussions and in-depth interviews to explore the views of consumers and industry regarding various ways in which the 10-star idea might be approached.

The project was undertaken from late January 2008 to late April 2008, as follows:

- An initial focus group discussion with consumers on the evening of 31 January 2008, with consultants and staff of the Department and the Minister's office observing [see our report of 12 February 2008, WSRS2179].
- Two focus group discussions with industry (manufacturers, importers and retailers) in Melbourne on 5 March and Sydney on 6 March 2008 (augmented with some in-depth interviews with retailers, as few wished to attend the groups);
- Two focus group discussions with consumers on 11 March 2008 in Wellington NZ, observed by the Department, several State Government regulators and EECA (one of these groups being part of another project on appliances in which we included the 10-star topic) [see our report dated 9 April 2008, WSRS2188];
- Two focus groups with consumers on 31 March in Queensland (these groups being part of another project on appliances in which we included the 10-star topic).
- Two focus groups on 16 April in Sydney, one with consumers and the other with manufacturers, importers and retailers, both being observed by a consultant and staff from the Department.
- One final focus group on 30 April with consumers in Sydney (this group being part of another project on energy efficient appliances in which we included the final concepts).

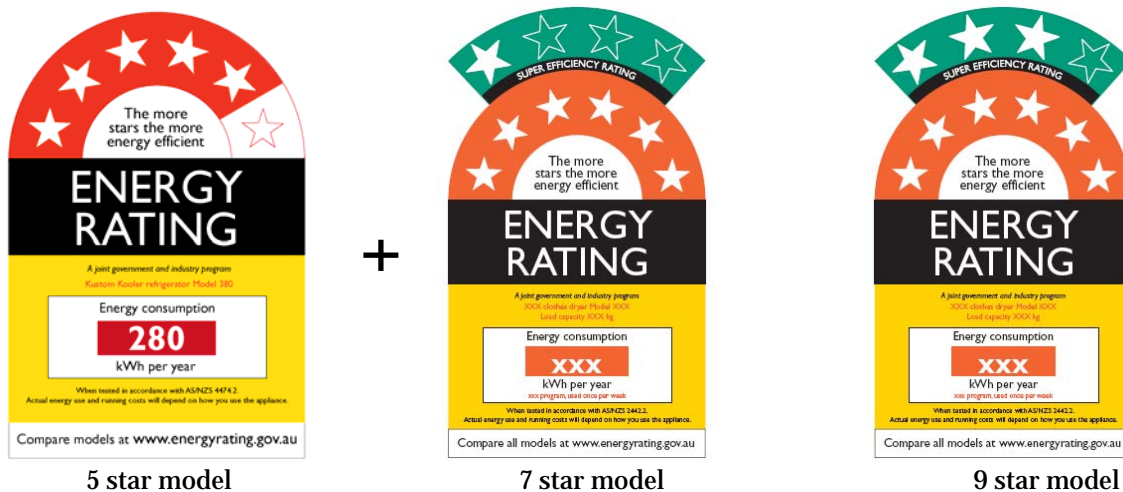
2. The Study Findings

This section of the report details the findings from the most recent round of focus groups undertaken to finalise the project. Findings of the earlier rounds of the study can be found in Appendix 1 and in earlier reports referred to in the Introduction.

2.1 Overview

The study concludes amongst consumers, the appliance industry and retailers, that:

- For appliances rating 1 to 6 stars, there is very strong support for retaining the tried and trusted 6-star format for the appliance energy efficiency label.
- For super-efficient appliances rating 7 to 10 stars, a new 10-star format is favoured, using a version of the familiar label with a second arch to highlight in green the additional star(s) earned by that model in excess of the basic six stars.
- For only these super efficient products, this approach clearly appealed to consumers and industry in terms of familiarity (builds on the existing label), relevance (conveys an important message), and motivation (highlights the best models in terms of energy efficiency).



2.2 Views on the Current Labels:



Awareness of the current 6-star appliance energy labels is almost universal, with most consumers having a good basic understanding of them.

- Most maintained that they have acted on the label in real appliance purchase decisions, usually as one of the final arbiters after they have weighed up practical considerations and compiled a short list of models from which to choose.

Of course you go for price, looks and features first, but then energy becomes a key consideration in the final decision – it does to me, anyway. [Consumer]

Even my mother asked me about it now when I help her choose a new refrigerator, and she's seventy-five. [Consumer]

It's been around for 20 years, the retailers, and staff and consumers are fairly used to it, and we do get asked about it a lot. Any change will probably make them ignore it for a while... [Industry]

- Almost all are aware that more stars mean greater energy efficiency, and half stars are clearly recognised and understood.

We've had several decades to work it out, only a dickhead would still be in the dark. [Consumer]

- Almost all refer to the stars in their search process (almost always before the numbers), and they like the graphical depiction. They see the stars as a fun concept that also communicates a simple and important message.

Six stars is great, it's fun and easy to use, so why would you change it? [Consumer]

The numbers don't stick out as the stars do... [Consumer]

The ones with more stars that are blocked in are more energy efficient.. [Consumer]

- Importantly, with a 6-star label people do not read to count the number of stars or half stars, they tend to recognise the rating in its entirety – the intuit or subitize² the rating, without (consciously) counting each star.

² The term 'subitizing', coined in 1949 by E L Kaufman et al, refers to the rapid, accurate, and confident judgments of number performed for small numbers of items. The term is derived from the Latin adjective subitus (meaning sudden) and captures a feeling of **immediately knowing** how many items lie within the visual scene. The accuracy, speed, and confidence with which people can subitize or intuit the number of items declines

*If they go to the 10, they wouldn't have half stars, would they?
Problem there, it wouldn't be as accurate with only whole stars.
[Consumer]*

*It's just obvious that it's 3½ or 4 stars, you don't even need to think
about it. [Consumer]*

- These days most people also refer to the numbers (energy consumption figure), and while they may be unclear as to precisely what the numbers represent, most do understand that the larger the number, the more energy that appliance consumes and/or the more it will cost to run.

*If you like two (models) with the same star rating, you can still
make a difference by choosing the one with the lower number
because it uses less power. [Consumer]*

exponentially above 4 or 5 items. [Kaufman, E. L., Lord, M. W., Reese, T. W., & Volkmann, J (1949). "The discrimination of visual number". *American Journal of Psychology* 62: 498-525]

2.3 The Context for Change:

As with all whitegoods in the late 1990s, and as with refrigerators and air-conditioners now, advances in technology result in improved energy-efficiency. Over time, technology improvement means that many models bunch near the top of the label. The star rating indices (SRIs) for some of these models may even exceed six stars, but the label allows only six stars to be displayed.

- To address this issue, government and industry agreed to develop new star rating algorithms that scale everything back by several stars. First undertaken in 2000, this rescaling process worked well. After a transitional period when both the old and new labels appeared on display stock consumers accepted the change because extensive consultation was undertaken. The process of agreement took several years and involved significant planning and other resources but achieving consensus took longer than first thought.
- As a result, some models in most appliance categories were eligible for more than six stars under the current algorithms but this efficiency advantage could not be communicated to consumers. Most consumers tend to assume that six stars is the maximum rating possible for an appliance, a few even assuming that a six star rating implies that an appliance is 100% efficient (eg, 'because that's the maximum there is').
- When the possibility of models scoring more than six stars is discussed with consumers in focus groups, many are unconcerned, assuming (perhaps incorrectly) that such models are likely to be beyond their budget. However, a growing number feel that this information ought to be readily available.
- Industry too has not had a ready vehicle to communicate efficiency information. There have been reports of manufacturers not taking advantage of all possible technological advances available to them because the current star rating system could not recognise and reward these products with more than six stars. One of the most often reported 'stories' is recorded in Appendix 2, about a manufacturer of dishwashers undertaking extensive 'eco redesign' in the late 1990s in conjunction with RMIT, but losing interest in developing models past six stars because their increased efficiency was not reflected in labelling (see Appendix 2).
- This historical limitation continues today with several industry members participating in this round of focus groups indicating (privately and confidentially) that they have delayed manufacturer, import or release of models that would have achieved an SRI of more than six stars because consumers would not know and competitors may gain insights into hard-won technological breakthroughs by reverse engineering these models.

Stories of suppliers not releasing their most efficient products because of labelling limitations have circulated for years. In a media statement on 6 August 2007 by Peter Garrett (then opposition spokesman and now Federal Minister for the Environment), which states in part that: *"A Rudd Labor Government will give energy efficiency a higher priority with a new 10-star appliance rating system and higher standards for appliances. ... (It) will work with industry, States and Territories to (inter alia) improve the six-star Energy Rating Label scheme so that up to ten stars could be awarded to an expanded list of products, including TVs. This would give manufacturers incentives to continually improve their products and give consumers more accurate information to help with their choices."* (See Appendix 1 for full text of statement).

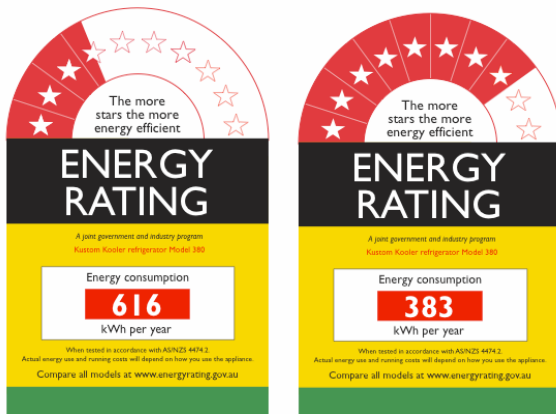
After several decades of consistent exposure on all labelled appliance models in all showrooms (and promotion and education from time to time in some jurisdictions), the appeal and effectiveness of the current 6-star appliance label has been well-established. All stakeholders and especially government agencies with ownership of the intellectual property of the energy efficiency label wanted to ensure that any changes would benefit all and would not confuse the community whose understanding of the current labelling information is very strong. Government would only countenance change if it built on and strengthened this legacy.

2.4 Reactions to 10-Star Versions of the Current Label:

After extensive qualitative research (focus groups and in-depth interviews) among consumers and industry in Australia and New Zealand, the research concludes that moving all labels to a mandatory 10-star label replacing the well-understood mandatory 6-star label would pose considerable risks in terms of its acceptance, impact and effectiveness among both consumers and the appliance industry. This option is not recommended.

The 10-star concept was discussed in some detail in earlier reports. This section summarises the main points and conclusions.

- a. Ten smaller stars within the current 6-star arch:



- b. Ten full-size stars in a horseshoe:



- c. Ten full-size stars in an elongated arch:



In comparing the 6-star and 10-star approaches:

- As mentioned earlier, the 6-star labels were seen as:

- Familiar
- Understandable
- Fun
- Well-liked
- Adequately differentiating models

BUT

- Maybe bunching near the top with some appliances, especially fridges.

- The 10-star labels were seen as:

- A bit messy, cluttered, confusing, too busy, less attractive, 'grubby'.
- Too much red compared to white on higher rating models, badly balanced.
- Difficult to read the number of (earned) stars. For up to around 5 stars, people can intuit (become aware) or subitize³ (ie, immediately know) the star rating, but over about 5 stars, people need to count the stars individually, not a welcome task for less numerate people (ie, alienating around one-third to one-half of the population).

The more stars the better, but don't you think this is just too many?
[Consumer]

The stars become irrelevant if there are too many, you look at the band, that is the speedo, the stars you don't look at, so ten is not on.
[Industry]

- Confounding for industry, time-consuming, delay-producing and more complex than it seems.
- More mathematical/decimal, etc; and consequently for many people, no longer as much fun as the 6-star label, a bit (too) serious

BUT

- Mathematical, more precise, something that more numerate and more technical people like (no more than around one-third of the population), and less numerate people do not like (one-third to one-half).
- Allows scale to be extended beyond 6 stars using the current algorithms and SRIs for very efficient models.
- However, all or at least the vast majority of appliances in all current and likely future product categories will earn less than four stars, meaning that virtually all labels on the shop floor will look (very) inefficient (as can be seen in the examples below), hence running the significant risk of devaluing the star rating system, unlike with the current 6-star label where at least some models reach or go to the right of "half-way".

³ See earlier footnote re the term 'subitizing'.

2.5 Extending the Mandatory 6-Star Label with a Voluntary Aspect to Produce a 10-Star Rating System:

During the extensive qualitative research (focus groups and in-depth interviews) among consumers and industry in Australia and New Zealand, mock-up labels depicting various ways of building on the current 6-star label to produce a 10-star labelling system have been trialled and either rejected or revised for further consideration. This section looks at the latest revisions. Earlier mock-ups have been included along with discussion in Appendix 3 and earlier reports.

For products ratings 1 to 6 stars, the focus groups recorded very strong support to retain the tried and trusted 6-star format. However, the research also found that a 10-star format has several unique positive features:

- It would enable manufacturers to identify clearly and effectively those models which exceed 6 stars.
- It would enable consumers to immediately identify the 'best in category' products and by building on the familiar 6-star format lessen confusion in consumers minds about the 'endorsement' by both government and industry of these super-efficient products.
- It would enable government agencies to manage the transition between labelling schemes where technology improvement leads to bunching as described earlier.

Therefore, for products with a rating between 7 and 10 stars under revised algorithms, the research found that consumers, suppliers and retailers all favoured a new 10-star format for super-efficient appliances. Three versions which showed some promise in the most recent round of research are discussed in Sections 2.4.1, 2.4.2 and 2.4.3. The final version of the 10-star label is derived from one of these and uses a version of the familiar label with a second arch to highlight in green the additional star(s) earned by that model in excess of the basic six stars – see Section 2.4.4.

- For only these super-efficient products (ie, rating 7 to 10 stars), this approach clearly appeals to both consumers and industry, in terms of familiarity (builds on the existing label), relevance (conveys an important message), and motivation (highlights the best models in terms of energy-efficiency).
- The research found no reasons why the new scheme of two complementary labels in the formats recorded in this report should not commence as soon as the technical logistics, adequate notice and a transition strategy are settled with stakeholders.

2.5.1

Option a: Roundel



7-star version

9 star version

- Only for appliances earning more than 6 stars, with this version suppliers would be encouraged to add a voluntary roundel showing the extra stars earned. Models with an SRI below 7 would not show the roundel.
- This approach continues to appeal to those consumers who are comfortable counting the stars (a numerate minority), but falls short with many others. It requires consumers to leap from six stars in the familiar arch to up to four more stars in a separate roundel, a conceptual leap which is confusing to some, and which others are unlikely to make.

I'm a fairly numerate person myself, I automatically think I've seen 2 stars and there's 6 that makes 8, but that is not so easy for everyone, once you get over 5 or 6 stars. [Industry]

That's not bad, adding a few extra stars to the current label, and making them green is a nice touch.

BUT

Too much reading ... too confusing ... too different many stars in too many places. [Consumer]

I just don't like the circle, I can't see where it starts, or how many extra stars they are trying to communicate. [Consumer]

- This approach has narrow appeal and is not recommended.

2.5.2

Option b: Wine Label Stars:



- Designed to be used on a voluntary basis, but only for appliances earning 7 or more stars, this approach overcomes the problem of the vast majority of (if not all) models in any one appliance category appearing to be very inefficient if all models were to carry the 10-star version.
- However, without a border linking the extra stars to the main label, few people make the connection.

I'd want a square box around the top, otherwise you think, it's not related, it's something else. [Industry]

I like the old system, I don't like the stars on the top, it doesn't look like the real energy label anymore. [Consumer]

Your green stars at the top don't look too bad, but I'd like to see them in a box to tie them to the label, especially if you keep red for the 6-star arch. [Industry]

- Green stars do indicate better for the environment, but the significance of yellow or gold stars is not recognised by most people in this context.

Even in the wine industry this idea is not regarded a great deal any more, because they give out gold medals even at the most obscure wine festivals, so just about all wine labels have got medals on them, no matter how bad the wine is – you just have to keep taking to enough shows. [Industry]

Forget yellow, green is the only one that says good for the environment. [Consumer]

My impression is that it's a friendly green product once it gets to have (any) green stars. [Consumer]

Yellow stars would indicate it's only a mid-way rating, they need to be green if they are super-efficient. [Consumer]

- It requires consumers to leap from six stars in the familiar arch to up to four more stars in a space above the label, again, a conceptual leap which is confusing to some, and which others are unlikely to make.

You have the proper stars, then a big star with nothing in it. I'm thinking 'what are you going on about?' [Consumer]

Don't want to confuse the fuel gauge and the numbers, people have come to know them, but fiddling with them could compromise all that. [Industry]

Label has been around now 20 years hasn't it. It's getting it into the public brain, and now we are going to pull it to pieces. Our surveys show that it works out there, but if you change it you will lose that consumer faith and trust. [Industry]

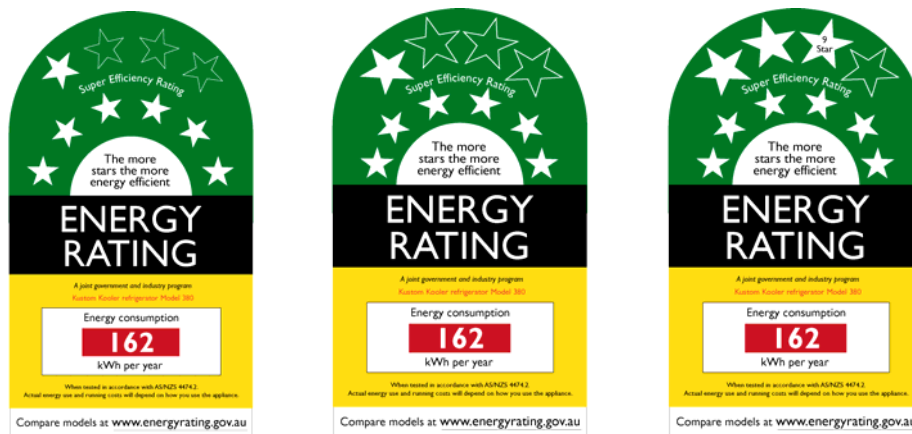
- Having different sized stars above the label proper confuses many people, and the fact that the large star represents the highest star earned by a particular model is lost on most consumers, even when the star number is printed in the star.

Same thing applies to those first ones with the stars on top, those really big stars, are they equal to the other stars? Surely they are worth more or they wouldn't have made them bigger. [Industry]

The number 10 on top and 6 stars there, what does that mean – they don't seem to be connected? [Consumer]

To achieve that 9 stars in energy efficiency, what is compromised in terms of performance. It's a bit of a joke, really, like a wine label – a vintage refrigerator. [Consumer]

2.5.3 Option c: Duplicating the Arch:



- Designed to be used on a voluntary basis, but only for appliances earning 7 or more stars, this approach took into account the shortcomings of earlier 'add-on' concepts by adding a second arch of four stars above the current arch of six stars.
- While consumers generally disliked the 'look' of these particular executions (eg, "like an alien's head"), after further consideration reactions to the overall idea among both consumers and industry were quite encouraging. In particular, people fairly quickly grasped the notion that the top arch was an extension of the bottom arch.

It's a terrible mess, looks like a comic book alien. [Industry]

I like the new system, the old one, it's the same colour and you have to count the stars, the new one there are two different sections.

[Consumer]

- However, the use of green for both arches of stars was confusing, indeed it took some time for people to recognise the two arches – again, people would prefer the first six stars to have the current red background, switching to green only for the top four stars. It was thought that this would also 'tidy up' the look of the top part of the label somewhat. Importantly, consumers also tended to argue that as appliances earning less than seven stars did not earn the colour green, retaining red as the colour behind the first six stars on the 10-star label was a good reminder of this.

Because there is no white I'm confused. [Consumer]

I'm confused with the other stars at the top. I know it means it's gone past six, but shouldn't the first six have red behind them, like the current label? [Consumer]

- People were also concerned about why the top four stars should be considerably larger than the bottom six stars – this suggested to some that they might have a different value from the first six stars rather than simply extending the scale.

Green gets the message across with environmental issues and what our government is pushing for, but it only needs to be for the extra stars, keep the (main) arch in red like the current label. [Industry]

Connotation it gives is that the stars on top are worth more, they are bigger... so twice as good... [Industry]

Theoretically they may be equal, but to a consumer they may be more, it's a bit misleading with the top stars being bigger like that. [Industry]

- The term 'Super Efficiency Rating' was barely noticed. When its presence was pointed out, people felt that it was a key claim and that more emphasis should be given to it.

Surely that's the key to the whole thing. It should be emphasised, not hidden away in the green haze. [Consumer]

- This concept deserves further development in tidying up the two arches and retaining red as the colour of the bottom arch to reflect the current label.

I think it would be more fair on the manufacturer as well to have up to ten stars. If they have a quality product, they should tell the consumer so the consumer knows. But they shouldn't all be in the one arch, it's too many, they need to split them – this one isn't there yet, but it's a good start. [Consumer]

So the big risk of doing all this would be making it all too hard, I feel this is getting too complicated for me. I wouldn't even know whether to count the white ones or the green ones. [Consumer]

That's why a technical person can see the value in just having green than red. Even if it's only got one star, it is more efficient if it's in the green, than in the red. That's why in all honesty you need to keep the red for the first arc of six stars. [Industry]

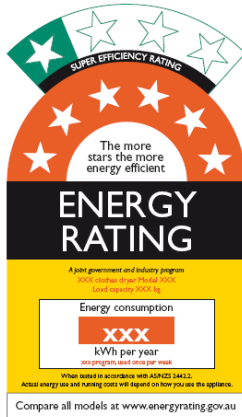
We've always had that red and so why would you want to change it – it warns you to choose carefully. [Consumer]

2.5.4 Option d: Duplicating the Arch, Mark II:

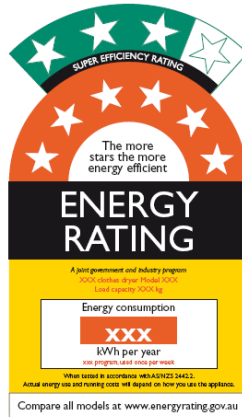
This final version of the 10-star label is derived from the dual arch design in Section 2.4.3 above, and based on the research findings, it adopts a version of the familiar label with a second arch to highlight in green the additional star(s) earned by that model in excess of the basic six stars.

- For only these super-efficient products (ie, rating 7 to 10 stars), this approach clearly appeals to both consumers and industry, in terms of familiarity (builds on the existing label), relevance (conveys an important message), and motivation (highlights the best models in terms of energy-efficiency).

Version A

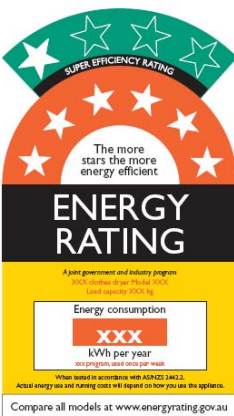


7-star version

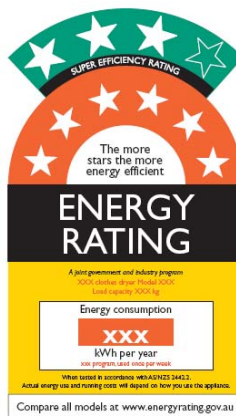


9-star version

Version B

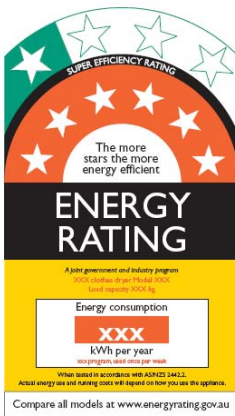


7-star version

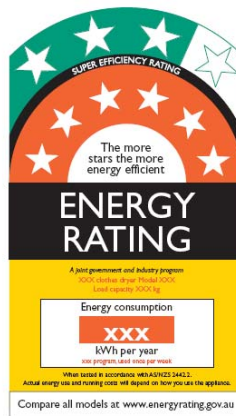


9-star version

Version C



7-star version



9-star version

- All three variations test positively, but with the two versions with a ‘coronet’ of stars (Versions A and B) being preferred over the full-width second arch (Version C).

I know they are the same size in the three version , but the stars in the wide arch look out of proportion to the bottom ones, whereas in the crowns they look right. But it doesn't really matter, they all say pretty much the same thing. [Consumer]

- To some, the top version (Version A) is preferred because the green background only behind the earned star(s) follows the method used with the red band on appliances below six stars, whereas others prefer the second version (Version B) because each extra star earned ‘brightens’ the green arch.

Wow, what a fantastic idea, just putting a crown on the top of the existing label makes so much more sense than all this other crap. See it on the showroom floor and you know you are looking at the king of the bunch. [Consumer]

The (first) one is totally consistent with the current label, it's a no-brainer, I like that. [Consumer]

I actually like the idea of having the whole green arch and having strong white stars, it's like it's up there in lights when the ten star having all the lights turned on – very 1950s Vaudeville, I like it a lot. [Consumer]

If I pass the fridges and see green, I would choose that one, not one of the fridges that only has red stars. I like to save energy, so I'd go for the one with the green stars on top. [Consumer]

- To reduce the number of colours on the label, some industry members would prefer to have green as the background on the new labels for both arches, and as the colour out of which the energy consumption figure is reversed. This has been considered but not pursued for two reasons: a) consumers reacted against all green in the previous versions (see Section 2.5.3), strongly preferring retention of the red as on the current label for the lower arch; and b) red is seen as relevant behind the consumption figure as it reminds (some say ‘warns’) consumers that the larger the number the greater the cost of running.
- More so than with any other tested mock-ups, consumers expect the versions portrayed above to encourage suppliers to strive for more than six stars.

It probably pushes the manufacturers who only have a few stars to really lift their game just a little bit, or they'll be left out in the cold. [Consumer]

If I pass the fridges and see green, I would choose that one. Not the red one. I like to save energy, so I'd go for the one with the green stars on top. [Consumer]

I don't see appliance makers losing any sleep over that round thing (roundel) or the trick stars (wine stars), because they don't mean much to me, either, but I'd be really worried about these 'cos I think we (consumers) will really go for these.

- The research found no reasons why the new scheme of two complementary labels in the formats recorded in this report should not commence as soon as the technical logistics, adequate notice and a transition strategy are settled with stakeholders.

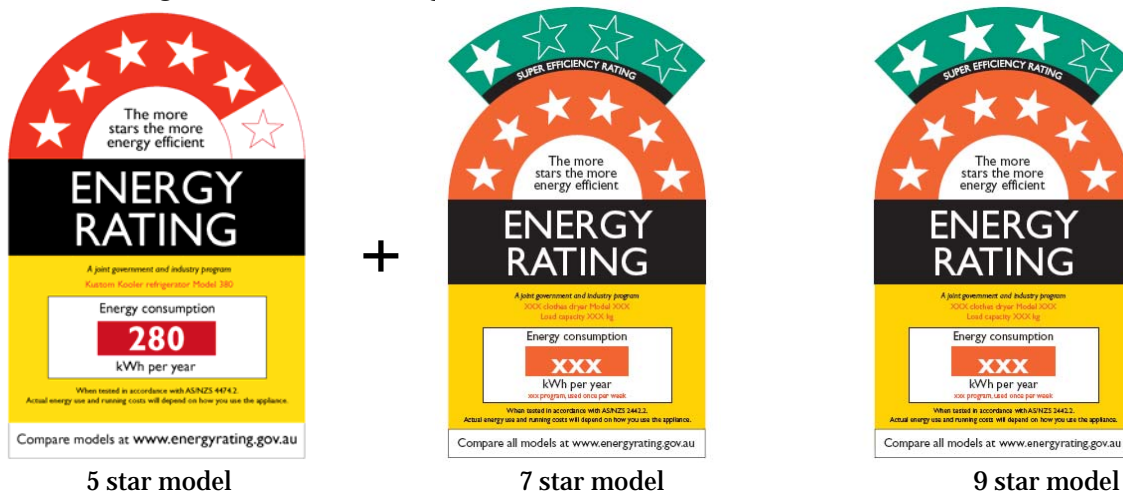
If you put one to four green stars at the top, and it's voluntary, it can be done straight away with the present standards, but if you change anything else, it's one or two years for a new RIS to change the standard. [Industry]

2.6 Conclusions and Outcomes

2.6.1 The Way Forward:

After extensive qualitative research (focus groups and in-depth interviews) among consumers and industry in Australia and New Zealand, the research concludes that moving all labels to a mandatory 10-star label format replacing the well-understood mandatory 6-star label would pose considerable risks in terms of its acceptance, impact and effectiveness among both consumers and the appliance industry. This option is not recommended.

- For product rating 1-6 stars, the focus groups recorded very strong support to retain the tried and trusted 6-star format.
- However, the research also found that a 10-star format has several unique positive features:
 - It would enable manufacturers to identify clearly and effectively those models which exceed 6 stars;
 - It would enable consumers to immediately identify the “best in category” products and by building on the familiar 6-star format lessen confusion in consumers minds about this ‘endorsement’ by both Government and industry of these super efficient products;
 - It would enable government agencies to manage the transition between labelling schemes where technology improvement leads to bunching as described earlier.
- Therefore, for product with a rating between 7 – 10 stars under revised algorithms, the research found that consumers, suppliers and retailers all favoured a new 10-star format for super-efficient appliances. The final version of the 10-star label uses a version of the familiar label with a second arch to highlight in green the additional star(s) earned by that model in excess of the basic six stars.
- For only these super efficient products, this approach clearly appealed to both consumers and industry, in terms of familiarity (builds on the existing label), relevance (conveys an important message), and motivation (highlights the best models in terms of energy efficiency).



2.6.2 A Consumer Education Program:

While the focus group research suggests that many consumers will be able to fathom fairly quickly the meaning of the extra arch of stars, some confusion associated with this change will inevitably occur. Government and industry groups must maintain the past partnership and develop a clear explanation of the purpose of the new system and how to interpret the 10-star format. As the super efficient products will take some time to appear, there is time for all the parties to develop a common plan and communication strategy:

- A consumer education program should be developed through 2008 to communicate the purpose and value of this improvement to the appliance labelling program to consumers both directly (better able to choose the most efficient immediately) and indirectly (provides an incentive and recognition for manufacturers to strive for even more energy-efficient models).
- The new complementary labels should be formally launched by the parties. This consumer education program should herald the launch of the improved labelling system and continue until a high proportion of prospective appliance buyers understand the new appliance label.
 - In conjunction with industry and consumer advocates, the campaign might also champion major technological advances in energy-efficiency, maintaining the relevance and importance of the new labelling system.
- Given the importance of the role of the retailer (and/or installer in the case of some appliances), a retailer education program (perhaps modelled on the past '*Reach for the Stars*' program) should be run in conjunction with the consumer education program.

2.6.3 A Program of Research:

A program of research should be mounted to underpin the new 10-star rating system in 2010 to measure the effectiveness of the transition to two complementary labels. This research needs to involve both consumers and industry, and should pursue the following objectives and tasks:

- Initial research should be undertaken to guide the program launch and assist in benchmarking, devising and pre-testing the consumer education program. Although this will mainly involve qualitative research (focus groups, in-depth interviews, etc), a quantitative benchmark study is also proposed to provide reliable baseline measurements of awareness, understanding and motivation prior to the launch of the program.
- An intermediate monitoring study in 2009 should be undertaken after appropriate periods of exposure, to assess the effectiveness of the program launch (mainly quantitative research) and to guide any revision or redirection of the consumer (and retailer) education program (mainly qualitative research).
- On completion of the consumer (and retailer) education program, a study should be undertaken in 2010 or later to gauge the overall effectiveness of the program, to document 'lessons learnt' and to establish what further action needs to be taken.

Appendix 1: Images of Trialled Label Mock-ups

This appendix describes the various mock-up labels evaluated during the research, and provides brief summaries of findings. For more detail, refer to the earlier reports referenced in the introduction.

1. The Current 6-Star Label:



- Very well-known, well understood, well respected and often used in the purchase decision process, usually in the final stages to help choose among short-listed models.
- Consumers see the stars as a fun concept that communicates a simple and important message. Almost all are aware that more stars mean greater energy efficiency, and half stars are clearly recognised and understood.
- The practice has been for the star rating algorithms to be revised in those few cases where models have started bunching near the top of the scale, resulting in the scaling back of all models in that category.
- However, occasionally a few very energy efficient models may emerge which gain star rating indices (SRIs) of more than six stars. With the current label, these are given six stars, the maximum number of stars available on the current label.
- Importantly, with a 6-star label people do not read to count the number of stars or half stars, they tend to recognise the rating in its entirety – the intuit or subitize⁴ the rating, without (consciously) counting each star.

⁴ The term 'subitizing', coined in 1949 by E L Kaufman et al, refers to the rapid, accurate, and confident judgments of number performed for small numbers of items. The term is derived from the Latin adjective *subitus* (meaning sudden) and captures a feeling of **immediately knowing** how many items lie within the visual scene. The accuracy, speed, and confidence with which people can subitize or intuit the number of items declines exponentially above 4 or 5 items. [Kaufman, E. L., Lord, M. W., Reese, T. W., & Volkman, J (1949). "The discrimination of visual number". *American Journal of Psychology* 62: 498-525]

2a. Ten-Star Mock-ups A: Fitting Current Arch with Smaller Stars



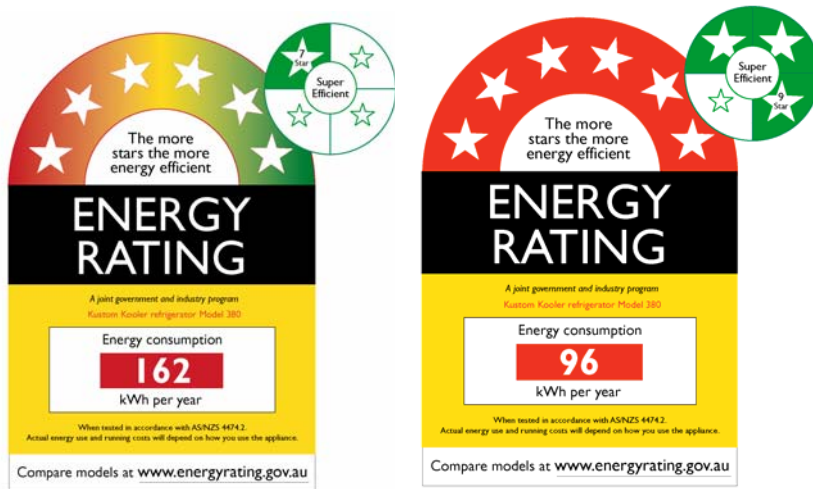
- When shown a range of 10-star label mock-ups using the same star layout as on the current label (ie, white stars on red background with unearned stars outlined in red on a white background), people tend on balance to favour sticking with the 6-star version, although some people (but mostly only the more numerate ones) also liked the 10-star versions to some extent.
- Most people experience difficulties with the number of stars, some finding them confusing and cluttered, others are not willing to count them.
- White stars on a colour-graded background that fills the arch for all star rating levels lose their impact, while black stars have negative connotations in Australia (eg, carbon footprint), although they have some support in New Zealand (eg, the All Blacks).

2b. Ten-Star Mock-ups B: Enlarging Arch to Fit Larger Stars



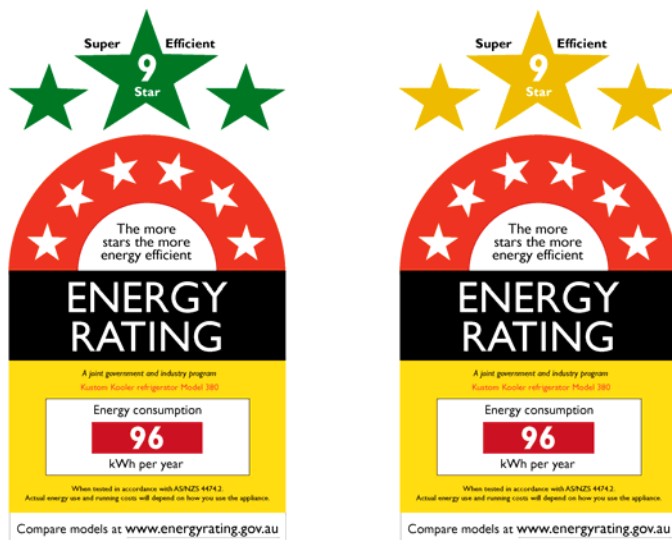
- Increasing the size of the arch to accommodate 10 stars of the same size as the stars on the current label reduces the clutter but not the confusion, with many people still not willing to count the stars.
- Describing the star rating (eg, '7 Stars' as on the examples above) may help those who are prepared to look further, although others maintain that having to describe the number of stars defeats the purpose of displaying them. Less numerate people are put off by any number reference to the stars (in these and other concepts), while numerate people see them as unnecessary (eg, 'overkill') at best, and as patronising, even offensive, at worst.

3a. Voluntary Add-On A: Roundel:



- Designed to be used on a voluntary basis, but only for appliances earning 7 or more stars, this approach overcomes the problem of the vast majority of (if not all) models in any one appliance category appearing to be very inefficient if all models were to carry the 10-star version.
- However, it requires consumers to leap from six stars in the familiar arch to up to four more stars in a separate roundel, a conceptual leap which is confusing to some, and which others are unlikely to make.

3b. Voluntary Add-On B: Wine Label Stars:

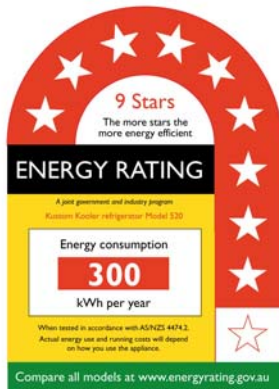


- Designed to be used on a voluntary basis, but only for appliances earning 7 or more stars, this approach overcomes the problem of the vast majority of (if not all) models in any one appliance category appearing to be very inefficient if all models were to carry the 10-star version.
- However, without a border linking the extra stars to the main label, few people make the connection. Green stars do indicate better for the environment, but the significance of yellow

or gold stars is not recognised by most people in this context. The use of one larger star is generally confusing.

- It requires consumers to leap from six stars in the familiar arch to up to four more stars in a space above the label, again, a conceptual leap which is confusing to some, and which others are unlikely to make.

4a. Voluntary 6+4 Stars A: Extending the 6-star Arch:



- The rationale behind these approaches was to retain the 6-star arch, and extend it in various ways, up to ten stars. These concepts were somewhat more appealing to some consumers than the symmetrical 10-star versions (see 2a. and 2b. above) because they retained much of the familiar look of (the arch of) the 6-star label. Unlike with the symmetrical versions, labels on a showroom floor of appliances all scoring less than six stars would be less unappealing overall. That is, whilst scoring less than half the stars they would nonetheless still look like “reasonable” scores – consumers and manufacturers were both concerned about the idea that if all (or almost all) labels appeared to show inefficient appliances, it was the label system rather than the appliances that would be at fault. Thus this approach goes some way towards overcoming the problem of the vast majority of (if not all) models in any one appliance category appearing to be very inefficient if all models were to carry the 10-star version.
- The mock-ups rated poorly however among those who found (the need to count up to) 10 stars confusing or off-putting.

4b. Voluntary 6+4 Stars B: Duplicating the Arch:



- ⦿ Designed to be used on a voluntary basis, but only for appliances earning 7 or more stars, this approach took into account the shortcomings of earlier ‘add-on’ concepts by adding a second arch of four stars above the current arch.
- ⦿ While consumers generally disliked the “look” of these particular executions (eg, “like an alien’s head”), after further consideration reactions to the overall idea among both consumers and industry were quite encouraging. In particular, people fairly quickly grasped the notion that the top arch was an extension of the bottom arch.
- ⦿ However, the use of green for both arches of stars was confusing, indeed it took some time for people to recognise the two arches – again, people would prefer the first six stars to have the current red background, switching to green only for the top four stars. It was thought that this would also ‘tidy up’ the look of the top part of the label somewhat.
- ⦿ People were also concerned about why the top four stars should be considerably larger than the bottom six stars – this suggested to some that they might have a different value from the first six stars rather than simply extending the scale.
- ⦿ The term ‘Super Efficiency Rating’ was barely noticed. When its presence was pointed out, people felt that it was a key claim and that more emphasis should be given to it.

5. Colour grading:

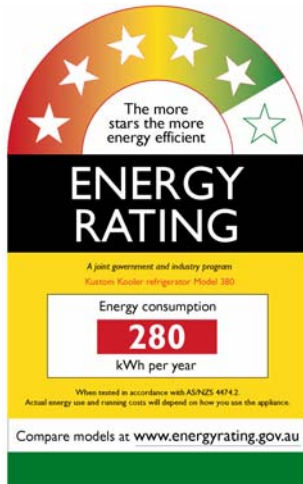
Version A (EECA)



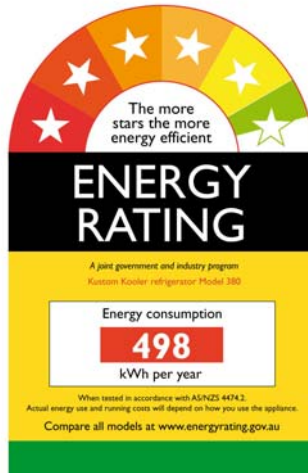
Version B (EECA)



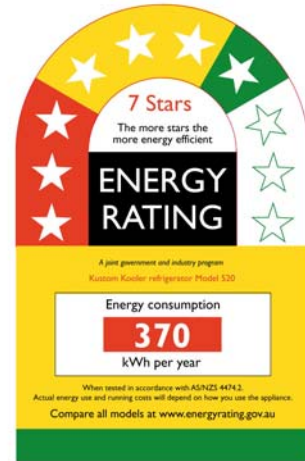
Version C (colour-graded)



Version D (separate colours)



Version E (3 colours only)



- Based on a colour-grading idea already introduced by EECA NZ for fuel consumption labels in that country (Australia is not following suit), EECA provided several mock-up labels for appliances. These label concepts (see above) did not test well overall. However, the idea of progressing from red (eg, poor efficiency), through yellow (eg, moderate efficiency), to green (eg, higher efficiency) as a colour-graded field appealed to many people initially as it implied that greater energy efficiency also had environmental benefits.
- However, having the full colour-grading on all labels dramatically downgraded the impact of the stars (ie, even a 1-star model looks environmentally sound because of the green), as did the small size of the stars, and black stars were inappropriate in Australia – in NZ they have positive connotations (eg, All Blacks, fern, etc), but in Australia they have negative connotations (eg, black balloons in ads portraying greenhouse gas emissions, carbon footprint, etc).
- In general, the colour grading notion clearly says that models with two or three stars are not good in terms of energy efficiency (because they are still down in the red zone), whereas the current label suggests they are not bad because they are better than one star.

I like the colours, you can actually see what it means straight away. Like the one in the red is a no-no, not good for the environment, the one in the green means go ahead. [Consumer]

BUT

Changing to colours will confuse the (retail) staff -- they've had the (current label) for so long they know what it is. [Industry]

- The EECA colour-grading (Versions A and B) is also seen as clean, and brighter than the plain (monotonal) red background. However, attempts to render a colour-graded version which manufacturers felt (Version C) that they could print or overprint reliably (especially in overseas factories) did not test well with consumers.

I think it adds confusion, why have the different colours, if you can see the stars, they are much clearer. [Consumer]

If the colours were better, the (colour-grading) might be OK, but these are very washed out. [Consumer]

- In principle, the overall grading from red to yellow to green clearly communicates positive environmental and/or greenhouse implications of choosing a model with a high number of stars (in the green zone) whereas the current label concentrates (only) on energy efficiency, with consumers not always able to make the distinction easily themselves. However, moving straight from red in the existing arch to green in the super-efficiency arch in the final version (see Section 2.5.4) works even better.

I get the idea, but don't buggerize around with yellow, go straight to green. [Consumer]

- White stars are preferred well ahead of black stars which have negative implications (particularly in Australia where black balloons have been used in ads to highlight greenhouse gas emitted by households) and therefore tend to contradict the colour-graded background (eg, the more black stars, the worse it could be).
- While the colour grading idea tested well overall initially, having the full colour-graded background on every label (ie, on all models regardless of how many or how few stars they earn) tends to confuse some people, suggesting that all models are efficient, although some may be a little more efficient than others, thus severely reducing the comparative effect. A more effective approach might be only to include the coloured background behind the earned stars (as with the current label), with the unearned stars outlined in their respective colour. However, given that most manufacturers would print the whole band on base labels and methods already trialled by manufacturers have proved unsuccessful, this approach is not recommended.

We've had several goes at using white and also silver to print white stars and overprint the unearned part of the colour band but it's not satisfactory, the colours still show through. [Industry]

We've tried overprinting (white over the unused colour) but it bled through so badly we can't do it. It needs to be opaque enough to cover it, and it's not. [Industry]

Even though we specify the colours, you look in the marketplace at the variation of the reds, greens and so on, some will want brighter greens to make their colour stand out. It doesn't matter so much with just red or even green, but colour-grading is out of the question. [Industry]

- Various attempts at producing a colour-grading using combinations only of the three colours already on the label (red, yellow and green) yielded generally dull results (eg, 'takes the joy out of it') and did not print consistently (Version C). Using six different PMS colours, one behind

each star, was considered 'clunky' and confusing to some (Version D), while using only red, yellow and green for several stars each tended to reduce even a 10-star arch to three divisions (eg, bad, ok, good), losing much of the differentiation (Version E).

- Industry members tend to see the colour-grading as an unnecessary additional cost, believing that switching from red to green after six stars would be just as effective and much more cost-effective.

A suggestion on blended colour – we spoke about it being a higher cost and extremely difficult to define – but to give the impression of increasing towards greenness and keeping one colour, has anyone looked at shaded or hatched, from very light green, nearly white, through to dark green. [Industry]

Even though we specify the colours, you look in the marketplace at the variation of the reds, greens and so on, some will want brighter greens to make their colour stand out. It doesn't matter so much with just red or even green, but colour-grading is out of the question. [Industry]

In the end the consumer pays, but the increasing likelihood of error is more important than any cost increase. [Industry]

Product comes from all over the world, from Pakistan to Thailand. The potential for mistakes is enormous if you complicate it with graded colour. [Industry]

Any of these changes in colour from the current label look difficult to produce and add complexity to the product and a little bit of cost. [Industry]

A suggestion on blended colour – we spoke about it being a higher cost and extremely difficult to define – but to give the impression of increasing towards greenness and keeping one colour, has anyone looked at shaded or hatched, from very light green, nearly white, through to dark green. [Industry]

Appendix 2: Extracts from Enquiry into the Victorian Energy Services Industry

ENVIRONMENT AND NATURAL RESOURCES COMMITTEE

Inquiry into energy services industry

Melbourne — 5 December 2005

Witness: Mr P. Harrington

Extracts:

“..... There are examples in Australia of what others and myself call eco redesign. In this very city you are privileged to have Alan Pears, who works at RMIT, who has applied this with respect to things like the Dishlex dishwasher. These models have not been replicated due to resistance from product and appliance manufacturers in this country.⁵ Some assistance to overcome that resistance would be an extremely worthwhile investment.”

“ The final reference point was to do with the roles of state and federal governments. I note that the Australian government, particularly as a signatory to the framework convention on climate change and the Kyoto protocol, albeit a non-ratifier, is best placed to introduce internationally compliant instruments, such as tradable emissions permits and economic measures, be they emissions trading or carbon taxes. There are significant constitutional barriers to that happening at the state level although those barriers have been tested, including here in Victoria. Other devices, such as labelling and accreditation schemes and energy efficiency standards are again best handled nationally, simply to avoid confusing both consumers and producers.”

⁵ This is thought to have been partly due to the fact that there was no competitive advantage, and some commercial risk, in further investment, development and marketing of appliances that were more energy efficient than six stars (conversation with Alan Pears).

Appendix 3: Media Statement from Peter Garrett - 6th August 2007

Labor Makes It Easier To Be Green With A New 10-star Appliance Rating System

Peter Garrett

A Rudd Labor Government will give energy efficiency a higher priority with a new 10-star appliance rating system and higher standards for appliances. These changes will make it easier for consumers to be green, Peter Garrett said today.

Australians are currently purchasing appliances like dishwashers and fridges that are more costly to run and less energy efficient than they should be. These appliances produce about half of household greenhouse emissions.

Labor will introduce Greenhouse and Energy Minimum Standards (GEMS) that fast-track smart efficient technology, helping Australian families save money, cut energy use and reduce greenhouse gas emissions.

A Rudd Labor Government will work with industry, States and Territories to:

- Improve the six-star Energy Rating Label scheme so that up to ten stars could be awarded to an expanded list of products, including TVs. This would give manufacturers incentives to continually improve their products and give consumers more accurate information to help with their choices.
- Introduce Greenhouse and Energy Minimum Standards (GEMS) that ensure greenhouse benefits as well as energy savings are factored into standard setting.
- Fast-track new standards for products including digital set top boxes, computers and home entertainment systems.
- Formally review existing standards every three years for all major appliances, like fridges and air conditioners, to ensure they keep up with technology improvements.
- Ensure any up-front costs to consumers are outweighed by savings on energy bills.
- Accelerate the introduction of the 1 Watt standard for standby power (Standby power consumes up to 10 per cent of all household energy); and
- Enhance ongoing testing and compliance measures to ensure products meet new standards.

The average Australian family spends more than \$250 a year on running electrical appliances, but this can be drastically reduced. For example, a 350 litre fridge with a three-star rating will cost around \$75 a year to run. This compares to a fridge with a five-star rating which will cost around \$45 a year.

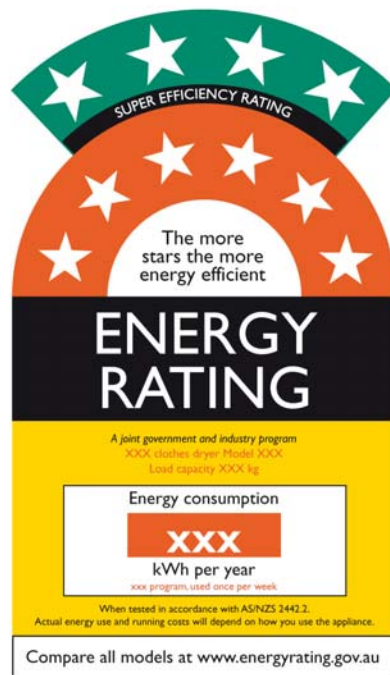
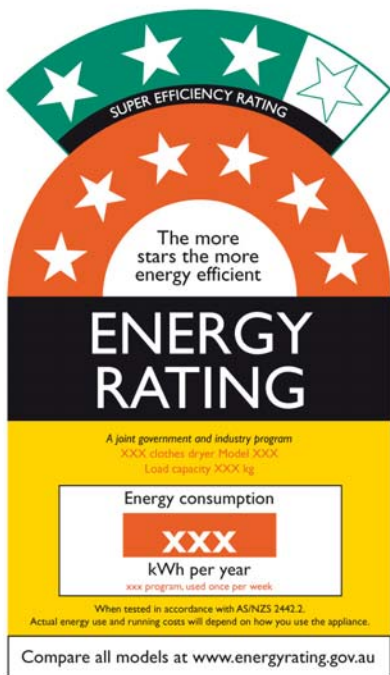
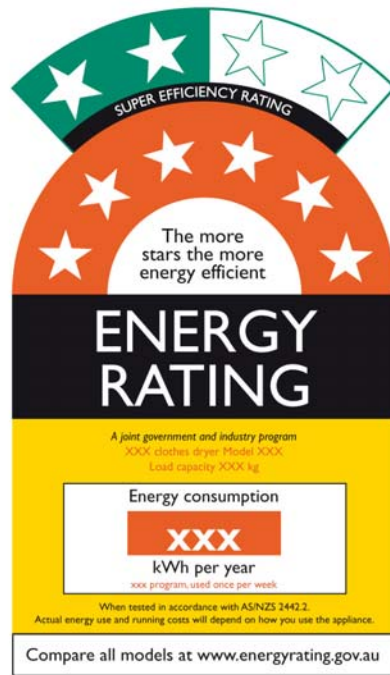
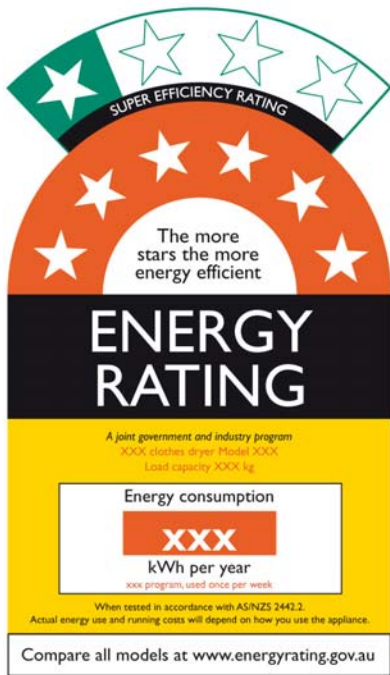
A joint State and Federal government study by the National Framework for Energy Efficiency estimates that Australian homes could reduce energy use by 35-70 percent using better, more efficient technologies.

In addition to smarter standards, Federal Labor will provide low-interest loans of up to \$10,000 to Australian families to implement water and efficiency measures at home like insulation, solar hot water, rain water tanks and solar panels.

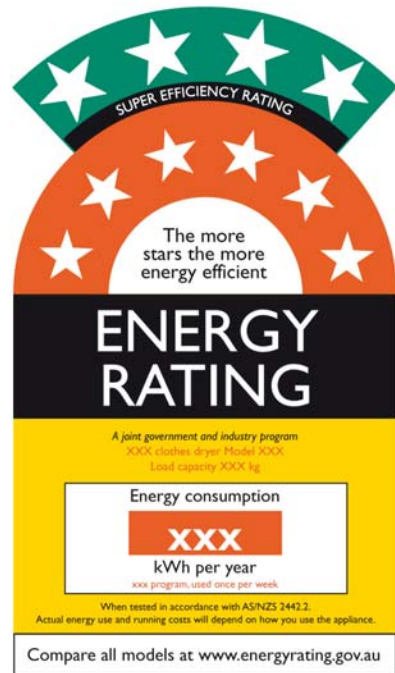
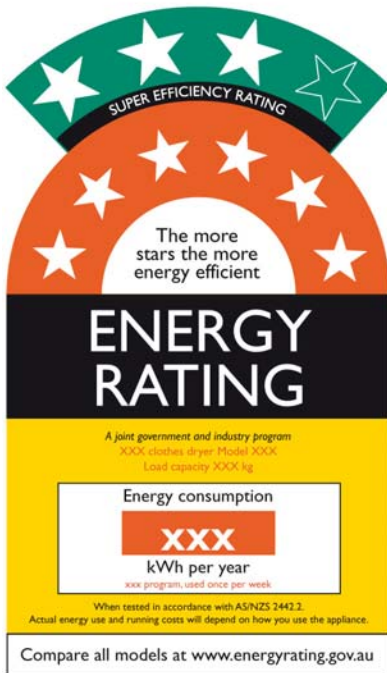
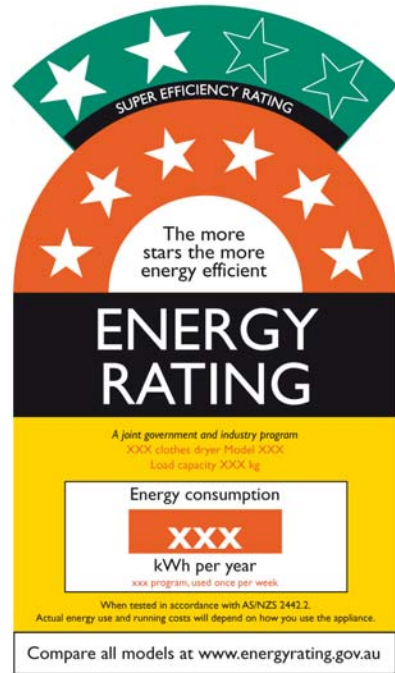
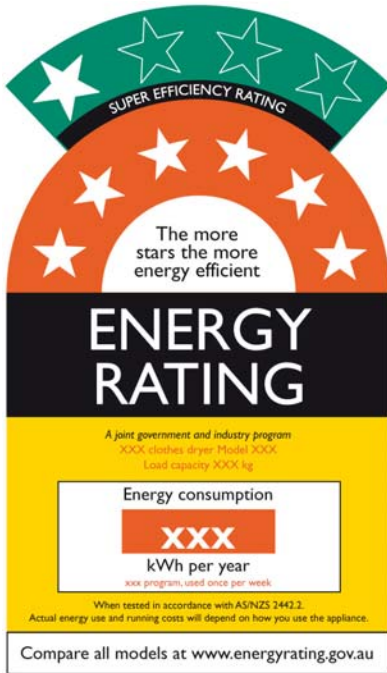
NOTES

1. At present, electrical appliances in Australia are regulated through two main tools:
 - a) Energy Rating Labels – ratings out of six stars which are mandatory for certain products. Labels are usually best suited for products where there is a large variation between the worst-performing and best-performing models. At present, some products which are well-suited for labels, such as televisions, are still not covered. Because labels are only calculated out of six stars, highly efficient products are bunched at the top end of the scale. This disadvantages consumers, who don't have the right information to make cost-saving decisions, and is unfair to manufacturers, who are not recognised for energy-saving innovations.
 - b) Minimum Energy Performance Standards (MEPS) – efficiency standards which certain products must meet before they can be sold in Australia. Many products, including digital set top boxes and computers, are still not covered by standards, while others are not updated to reflect innovations.

Energy Rating Labels from 7 to 10 Stars: Version A



Energy Rating Labels from 7 to 10 Stars: Version B



Energy Rating Labels from 7 to 10 Stars: Version C

