Toolkit

Insights into Energy Labels

Session 8

Kevin Lane and Emily McQualter, IEA - Bangkok, 2 April 2019

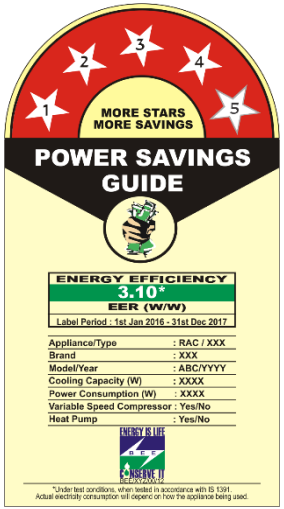
#energyefficientworld

Overview of the appliance training sessions

#	Session	
0	Introduction and roundtable	☑
1	Planning energy efficiency programmes	☑
2	Selecting products for MEPS and Labelling programmes	☑
3	Assessing efficiency performance and setting MEPS	☑
4	Industry transformation	☑
5	Stakeholder involvement and communication	☑
6	The relationship between product efficiency and price	☑
7	Modernising energy efficiency through digitalisation	☑
8	**Insights into energy labels**	☐
9	Monitoring and evaluating policies and programmes	☐
10	Monitoring, verification and enforcement	☐
11	Roundtable discussion, review and report back	☐

What are energy labels?

- When people buy appliances they buy an energy service in two parts
  - They can see the appliance, and its cost
  - They cannot see the energy consumed, or its running costs
- Energy labels provide consumers with information on the energy efficiency of a product
- There are two main types of labels:
  - Comparison
  - Endorsement



Comparative labels

- When people buy appliances they buy an energy service in two parts
  - They can see the appliance, and its cost
  - They cannot see the energy consumed, or its running costs
- The label helps consumers to understand which products have the lowest total cost
- Energy label is attached to an appliance when it is displayed for sale: tells people about energy use before they buy
- Comparative labels may be voluntary, but mandatory is more common.
- Comparative labels usually communicates in two ways:
  - Quick visual rating
  - Data e.g. actual kilowatt-hours (kWh), Running costs, capacity/size

Common Comparative Labels

Dial

Vietnam

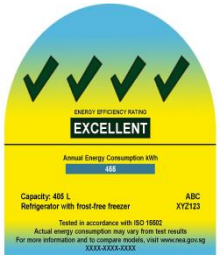
Thailand

South Korea

Indonesia

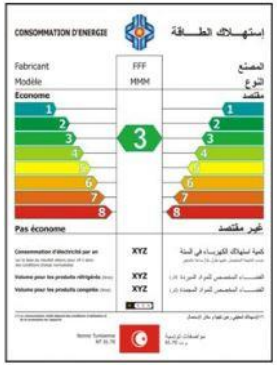
Malaysia

Singapore

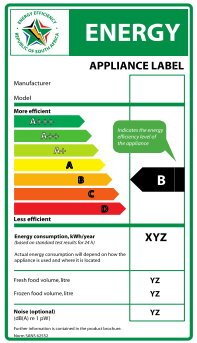


Bar

Tunisia



South Africa



Brazil

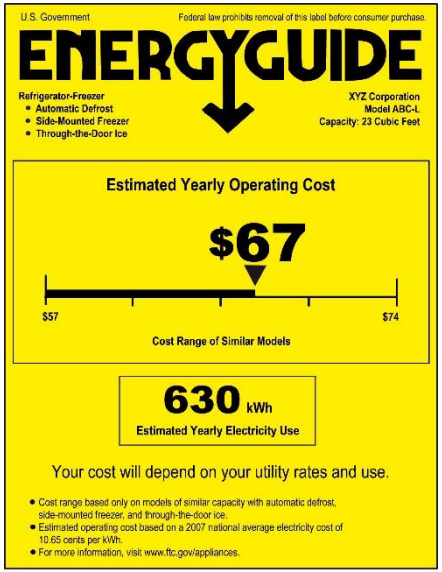
China

EU

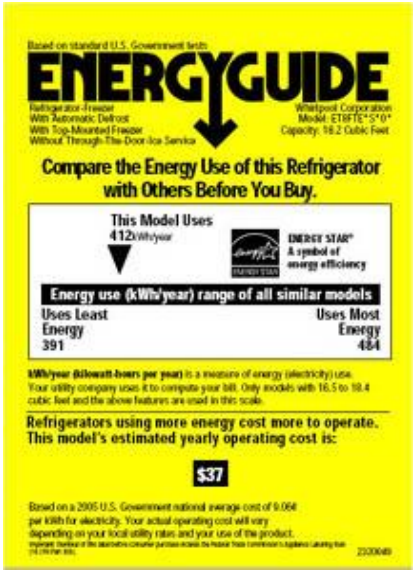
Continuous Comparative Labels

Continuous

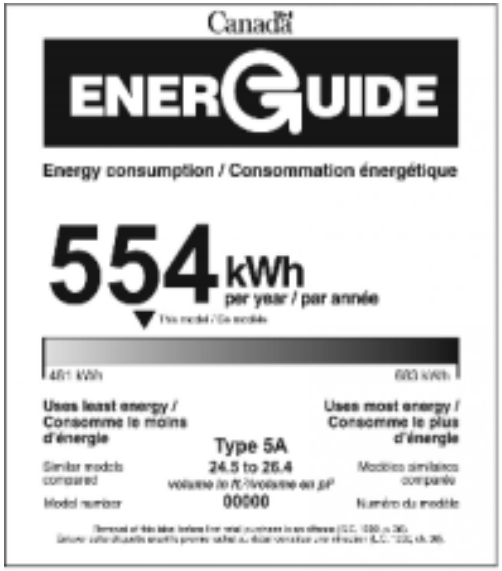
United States



Philippines



Canada



Comparative labels allow consumers to **compare** performance among similar products using either discrete categories of performance or a **continuous** scale.

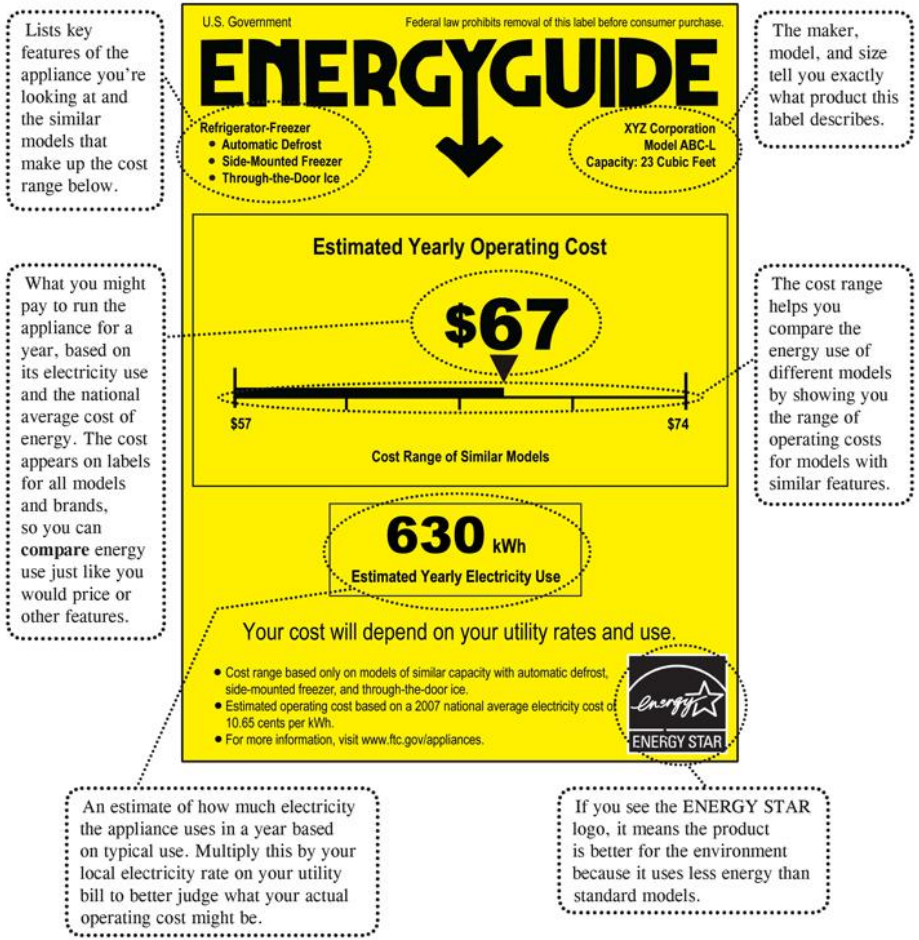
Comparative labels

Categories

Comparative labels allow consumers to **compare** performance among similar products using either **discrete categories** of performance or a continuous scale.

What information can be included? US example

What do consumers care about?



What information can be included? Philippines example

What do consumers care about?

Check if the brand and model of the air conditioner match the given information on this label.

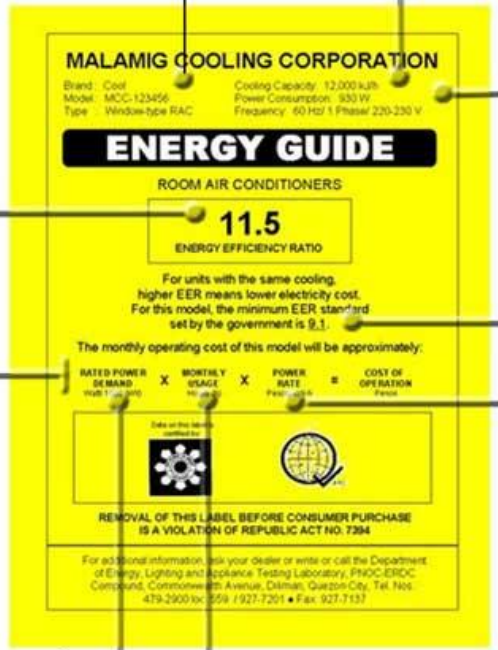
The Cooling Capacity expressed in kilojoules per hour quantifies the maximum amount of heat that the air conditioner can remove from an enclosed space.

Here you will find a number which is the Energy Efficiency Ratio (EER) of the unit as tested and certified by an independent appliance testing laboratory.

EER is determined by the following formula:

$$EER = \frac{\text{Cooling Capacity}}{\text{Power Consumption}}$$

Use the formula to calculate the electricity cost and compare this with other air conditioners of the same cooling capacity.



The Power Consumption expressed in watts tells you how rapidly the energy is used when your air conditioner runs at its maximum cooling capacity.

This air conditioner has to meet the stated minimum standard.

Your current electricity bill will give you a good estimate of the power rate.

EXAMPLE:

kWh used = 650 kWh,
Net Bill Amount : P5,739.50

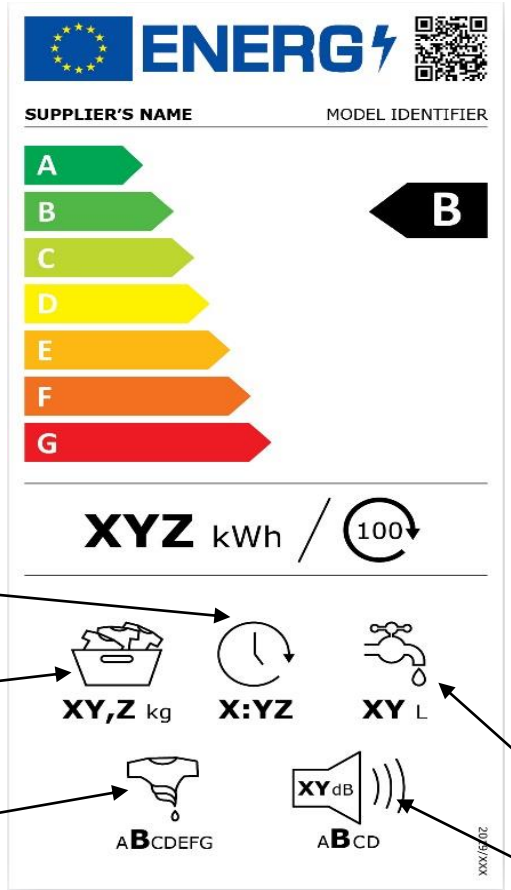
Power Rate = P 5,739.50/850 kWh
= P 8.83/kWh

Substitute the Power Consumption after converting it to kW. Do this by dividing it by 1000W/Kw

This refers to the number of hours you operate your airconditioner in a month.

What information can be included? EU example

What do consumers care about?



Programme time

Kg laundry per wash

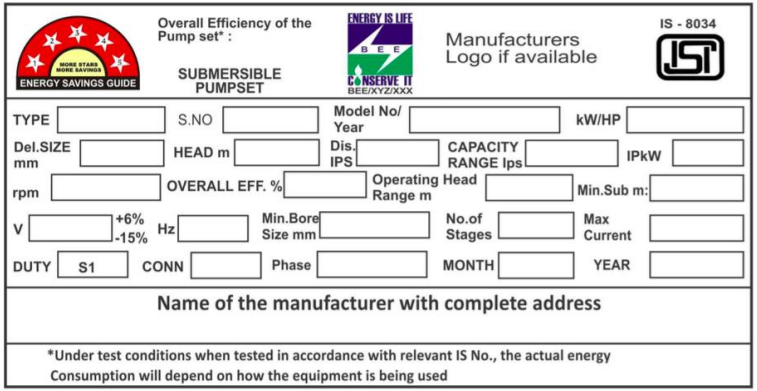
Remaining water content

Water consumption

Noise levels

- Energy consumption
- Programme time
- Water consumption
- Power consumption in 'off-mode'
- Power consumption in 'left-on mode'
- 'left-on mode' duration
- Remaining moisture content
- Airborne acoustic noise emissions
- Maximum spin speeds.

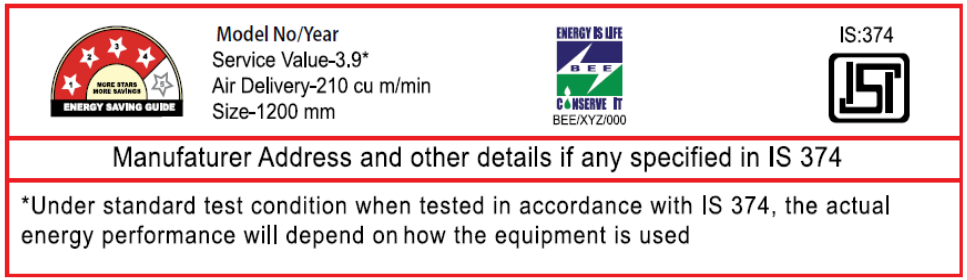
Some products may need different information



India - pumps

What do consumers care about?

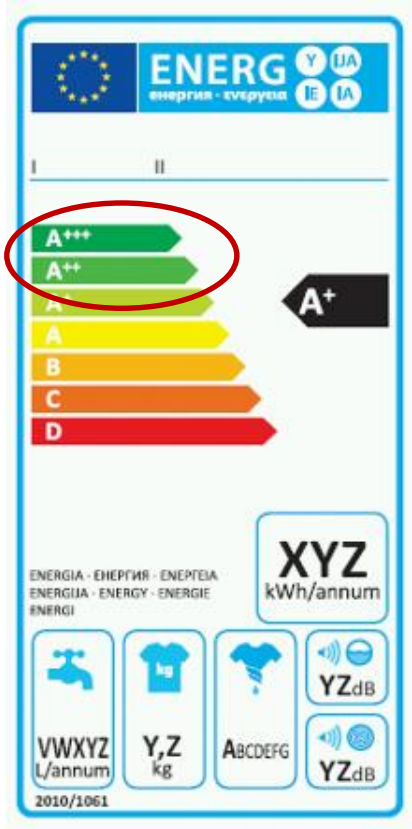
Take into account international standards

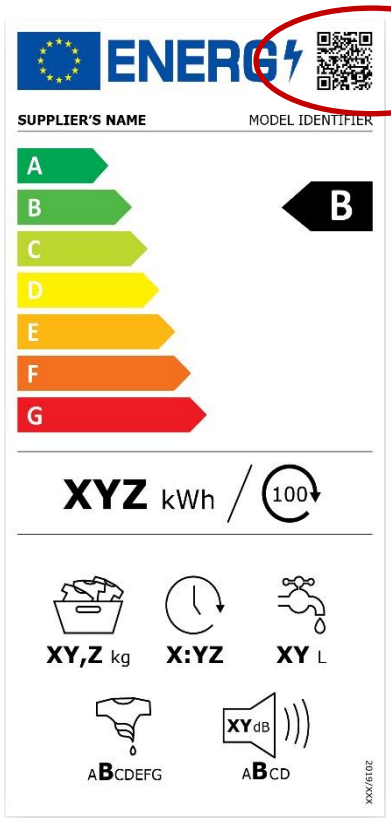


India – ceiling fans and induction motors

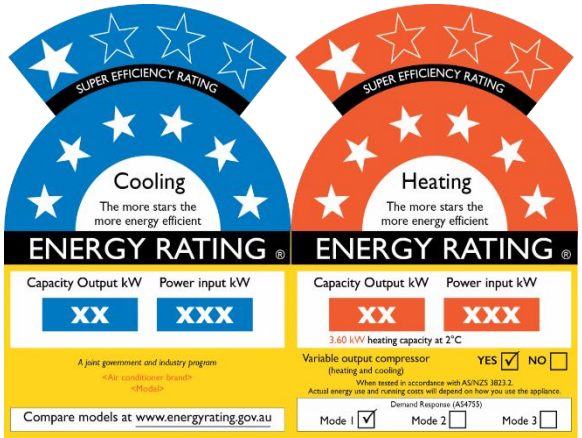
Star Rating	Motor Efficiency Class
1 Star	≥ IE2 & < IE2(+)
2 Star	≥ IE2(+) & < IE3
3 Star	≥ IE3 & < IE3(+)
4 Star	≥ IE3(+) & < IE3(++)
5 Star	≥ IE3(++)

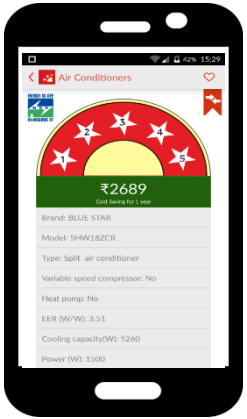
What to do when you run out of space?





- Reconfigure label e.g. EU from A+++ to A
- Help consumers access more information e.g. via QR codes and or apps





China Energy Label QR Code

1. QR codes can lead consumers to large quantities of product and service information, improve the transparency, openness and availability of product quality information, improve the consumption experience, enrich the consumption service contents, and better guide energy efficient and sustainable consumption.

2. QR codes makes it possible to obtain the comprehensive product information in real time with smartphone only, which significantly improves the convenience and timeliness of supervision, enriches the type of law enforcement, and provides important guarantee for combating false labels and improving product quality.

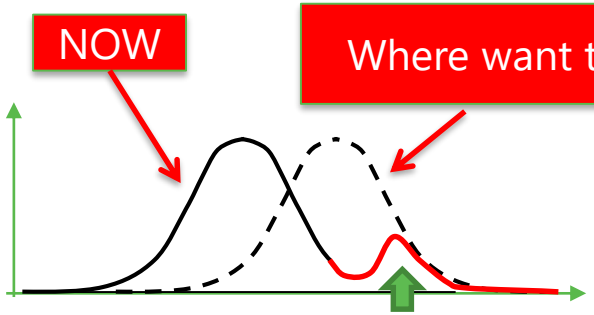
3. QR codes can provide resources on “choose, use, repair and replace”, enhance the interaction between manufacturers and consumers, help manufacturers to promote energy-saving products and help consumers to obtain value-added services.

Endorsement labels

- Identify the most energy efficient models, i.e. not all products labelled
- Generally endorsement labelling schemes show little product specific information for each model
- Endorsement labels are voluntary
- Can be updated more rapidly than a comparative energy label
- Usually paid for by manufacturers, third party tested
- Often linked to other policies - incentives

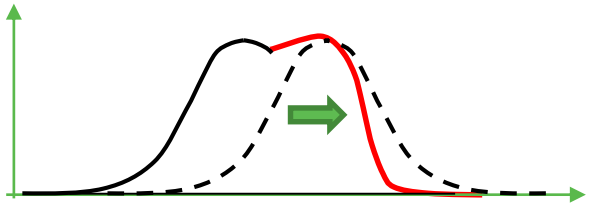
Market Transformation: impact of different policies

Leading Edge: establishing new technologies in the market



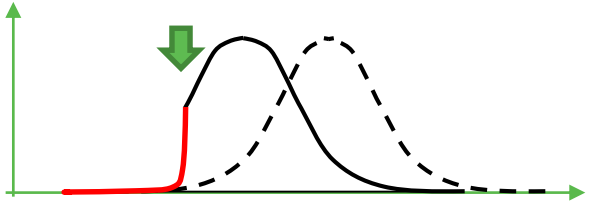
Innovation
- R&D*
- Demonstration
- Technology transfer
- **Endorsement labels**

Mid Market: spreading good practice



Reduce barriers
- Access to information / finance
- **Comparative labels**

Laggards: discouraging bad practice

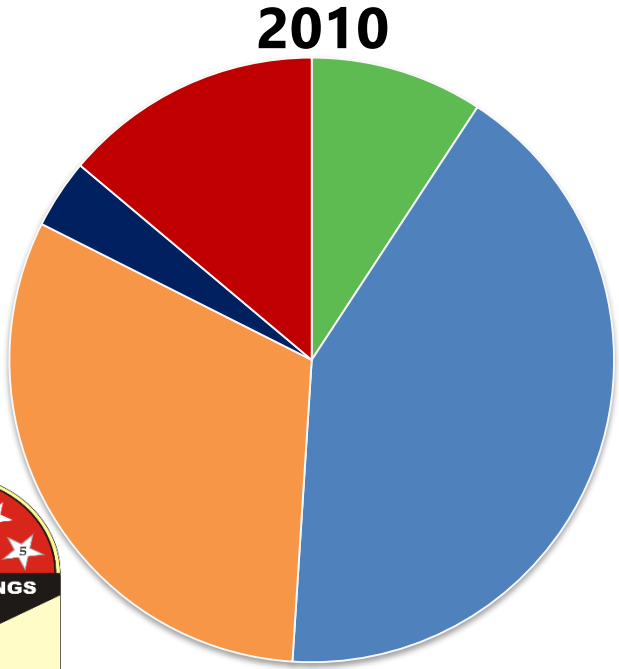


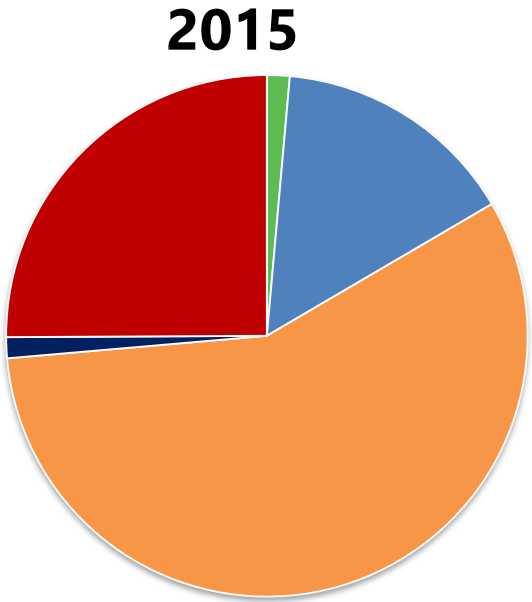
Remove worst
- Performance standards

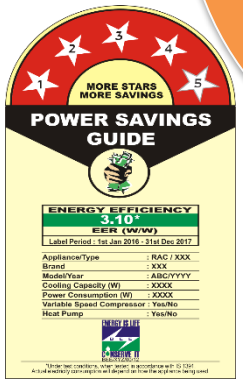
Market mechanisms increase incentives for higher energy efficiency across the whole distribution

* Research and Development

Changes in air conditioner market in India





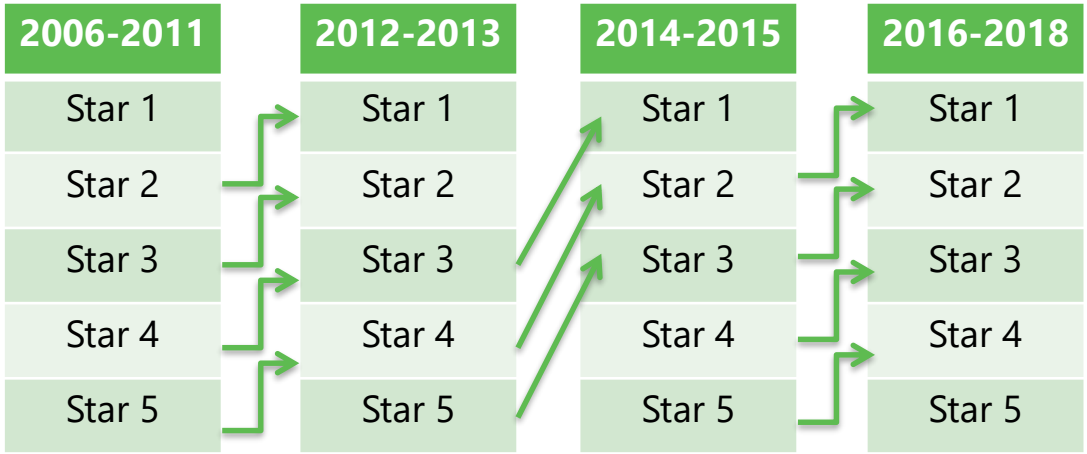


When do you need to upgrade your labels?

Source: BEE

Having an upgrading plan gives clear signals to manufacturers

India Star Label Up-gradation (frost free fridge)



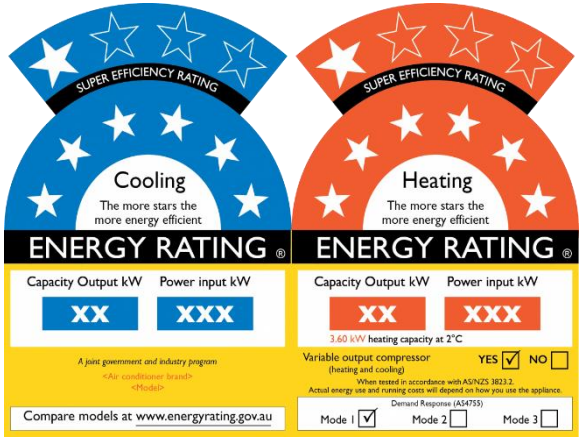
How to take into consideration unexpected changes in the market?

How to promote super efficient products?

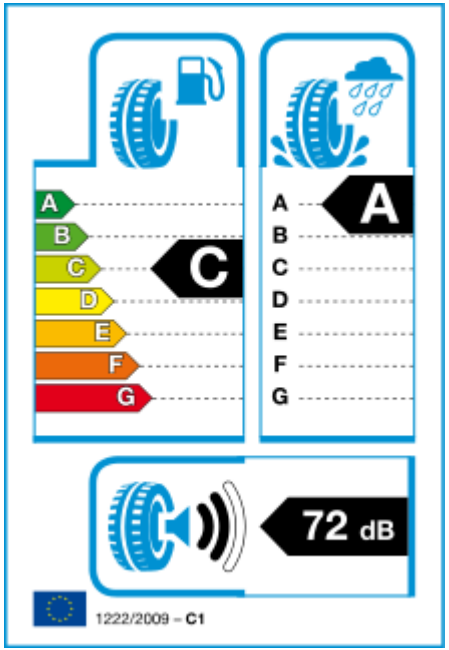
Most Efficient 2016
www.energystar.gov

GLOBAL EFFICIENCY MEDAL
SEAD

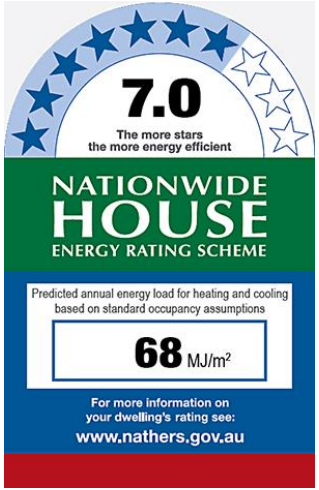
ENERGY STAR 2018
Emerging Technology Award



Energy labels are not just relevant for appliances



What other products could have energy labels?



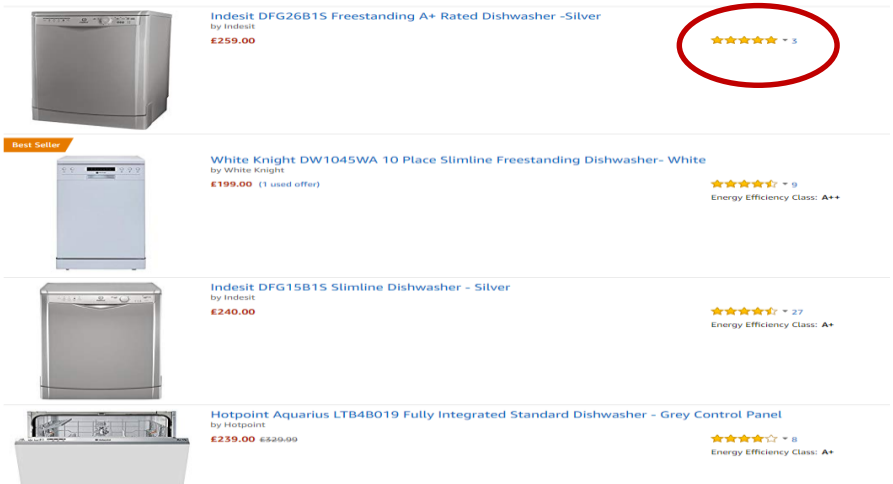
EU fuel consumption label for tires (November 2012)

Label Design

- The most effective labels are visually intuitive
  - Need to be clear, easy to understand and communicated.
- Do not put too much information on the label – 'over crowding' will likely lessen consumer response and impact
- But different labels work in different ways to reflect cultures & different perceptions
  - Letters vs number vs symbols
  - Language, script, left to right ranking
  - Positional indicator – how does this model rank on absolute scale and in relation to other models?
  - Is high number or low number better?
- Need to select one label format and stick to it.
  - Takes years for buyers to become familiar with labels.

Label placement

- Clear instructions for retailers
- Training for retailers
- Information on labels should also appear on electronic formats such as websites where consumers may purchase products online



Source: Amazon UK

Source: REI

Label placement

Label placement (2)

Label placement (3)

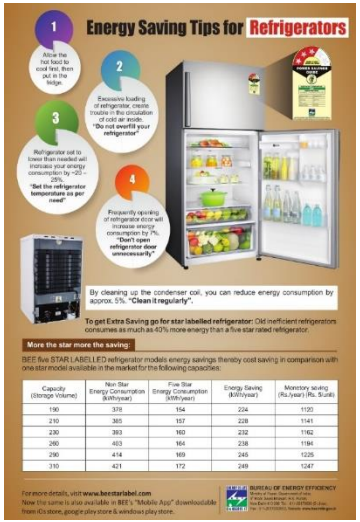
Label placement (4)

Label placement (5)

- The best of both types of label?

Awareness-raising

- Effective labels require buyer awareness-raising campaigns.
- Buyer purchasing decisions that favor energy-efficient and high quality products ultimately provide a “pulling” force in the market.
- Encouraging consumers and others to buy products at the high end of efficiency and quality creates market demand (and drives down prices)



Energy Labels – key considerations

- MEPS and labelling often work closely together
  - Lowest rank of comparative label begin at MEPS level
  - Endorsement labels align with higher ranks
- Consumer awareness is crucial
- Checking compliance is important
- Ongoing evaluation of energy labels (and their S&L programme) is needed to measure how well it is working and if it can be improved

Exercise

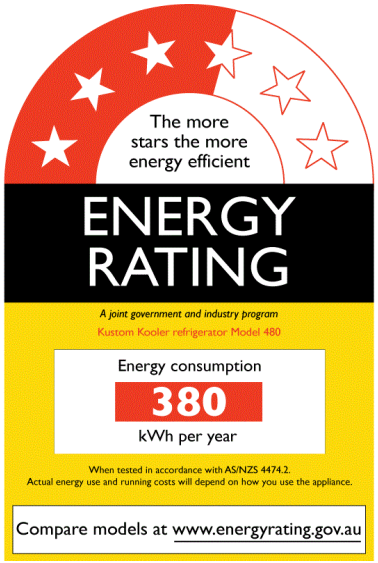
Divide into three groups

Examine the labels

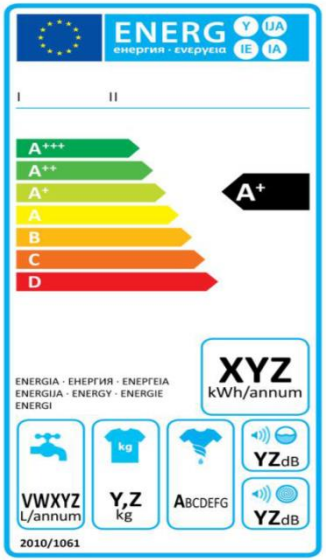
Each group to discuss and report back about the effectiveness (pros and cons) of one comparative label

Exercise

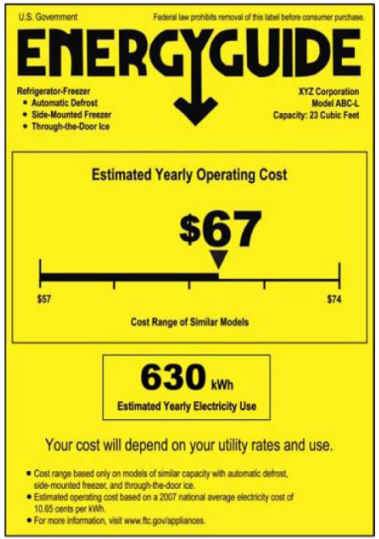
1. Dial
Australia



2. Bar
EU



3. Continuous
US



Scenario

A newspaper article has questioned the validity of energy labels on refrigerators, saying that the label does not reflect real usage. Your manager has asked you to outline a response.

What do you say?

Understanding the issue

What information is included on the label, how is it sourced?

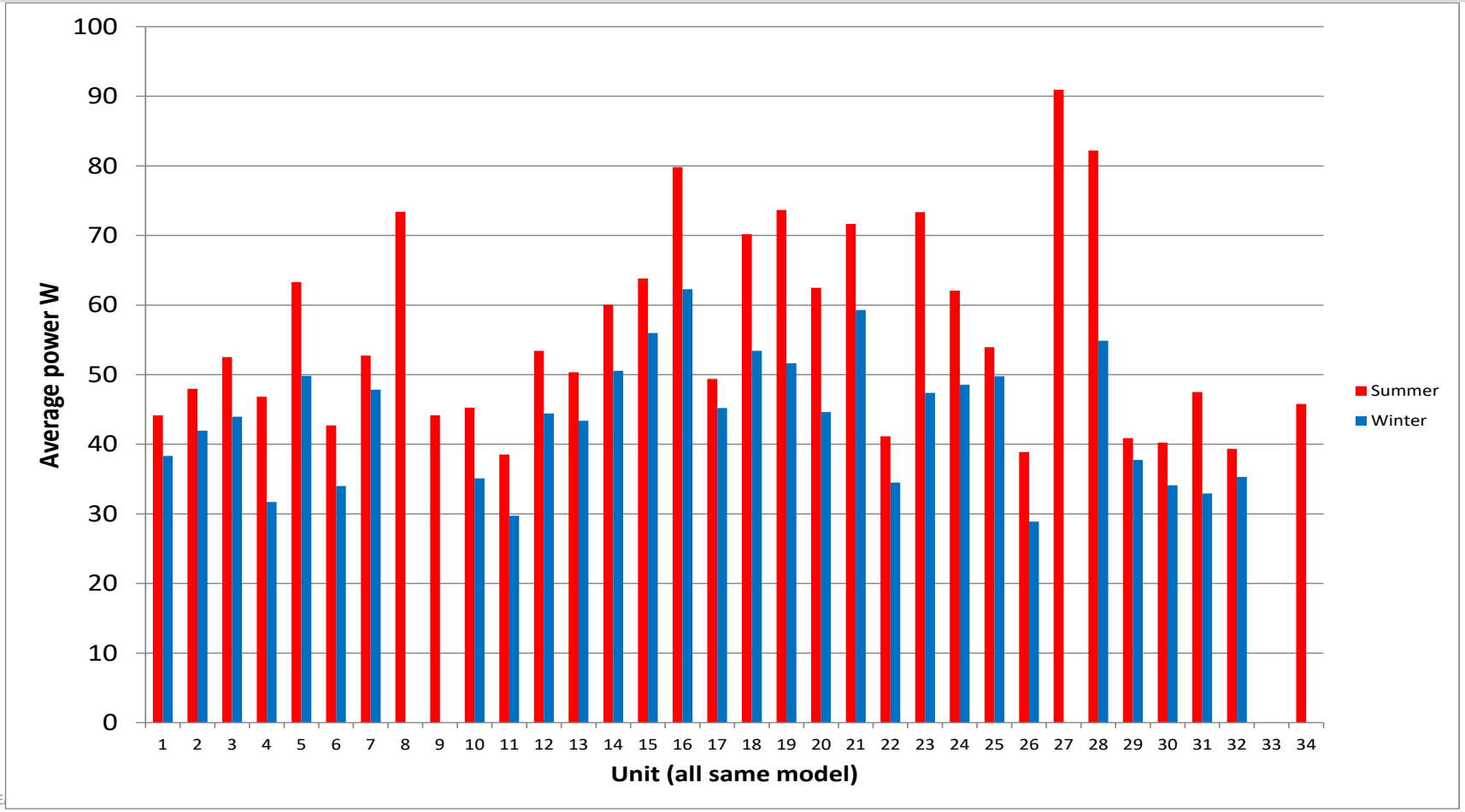
What do we think might be the explanation?

- Results on label based on 'standard' laboratory test
  - E.g. International, regional or local technical standard
  - Plus any guidelines for conducting test
- Laboratory test gives energy performance under strict conditions
- Average usage patterns, energy costs, calculated to give other indicators
- You **would not** expect each refrigerator to provide the exactly same performance in the home as in the laboratory

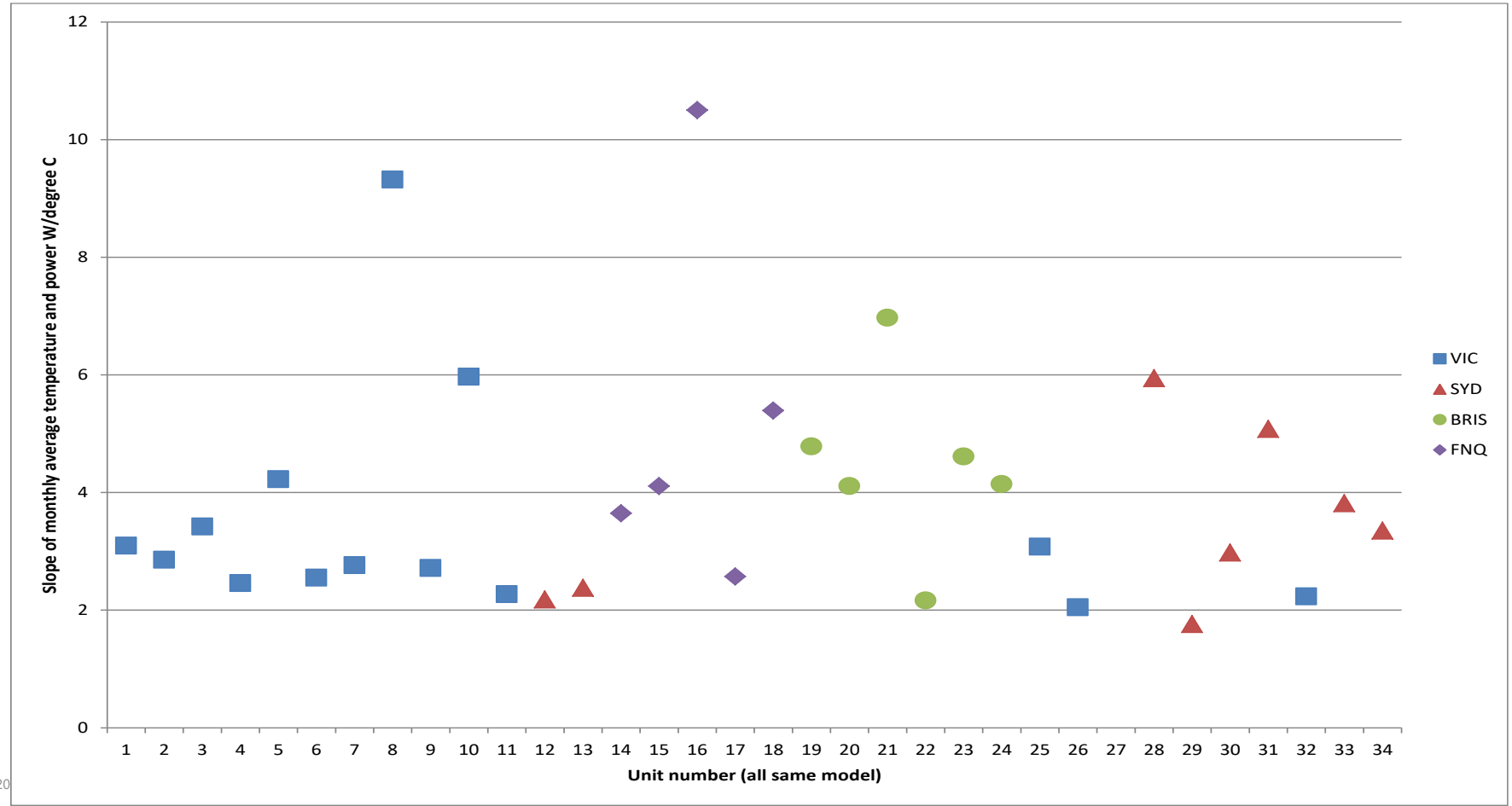
Case study

- Why may real use of a refrigerator vary from the test results?
- Possible variations
  - Climate – ambient conditions
  - Door opening frequency
  - Loading - foodstuff

Summer and winter same model: impact of ambient temperature



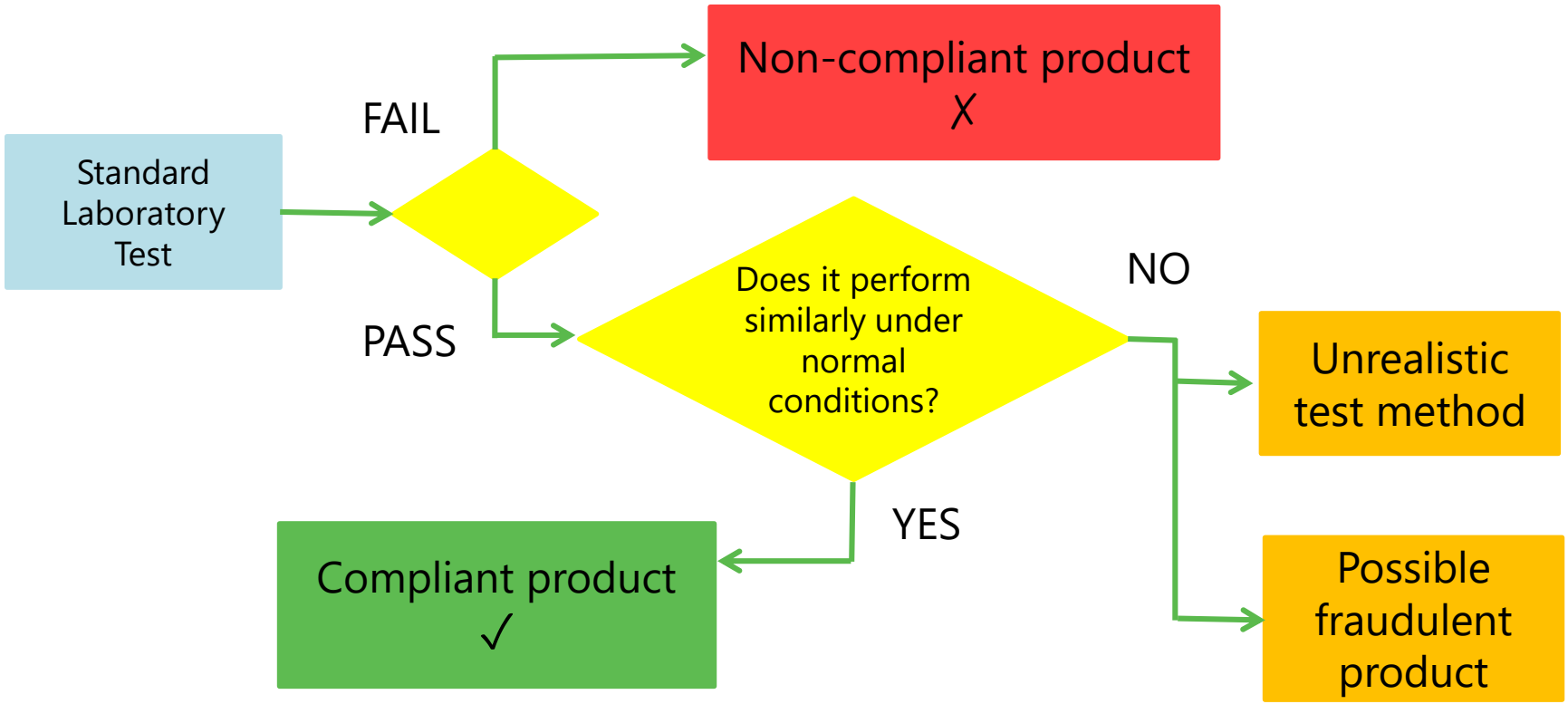
Same model, different households: impact of users



What are fraudulent products?

- Products designed to perform differently under test to outside the laboratory.
- Include mechanisms to sense and circumvent the test procedures.
- Sometimes referred to as ‘defeat’ devices.
- Not strictly an issue of ‘non-compliance’, since they meet requirements under test conditions
- Products performing significantly worse outside the lab. leads to an adverse impact on energy consumption, consumer benefit, the environment and competition.

Test procedures: Representative, fraudulent



Summary

- So:
  - You **would not** expect each refrigerator to provide the exactly same performance in the home as in the laboratory

- But problems arise if they are too different (not sufficiently representative):
  - Consumer complaints
  - Unrealistic savings estimates & cost-benefit
  - Poor signal to product designers
  - **Products sense that they are under test**

Summary

- Performing differently under test from general use is not conclusive evidence of a fraudulent product
- Why? Because the test procedure may not be reflective of ‘normal’ circumstances
- The better tests try to mimic either a range or an average set of conditions reflective of the ‘real world’
- However, a single test cannot replicate the many differing ambient and usage conditions found
- So some divergence is inevitable
- Detailed observation of product behaviour under different conditions may be required for conclusive proof

Resources

Anticcs

https://www.anti-circumvention.eu/about-project/project-introduction

Thailand

https://www.youtube.com/watch?v=INWxQ_6P4Iw

https://www.youtube.com/watch?v=IwsnqT68B0o

Australia

https://www.youtube.com/watch?v=G5KPNYcHCNg

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FOR SUSTAINABILITY

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Energy Agency
Secure
Sustainable
Together

Department of Alternative
Energy Development and Efficiency
MINISTRY OF ENERGY

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