‘Visi Coolers’ – February 2022

Workshop at AVARI- Lahore

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Efficient Appliances for People & the Planet

A brief intro to benefits of having Standards and Labels

“Definition” of MEPS and Labelling

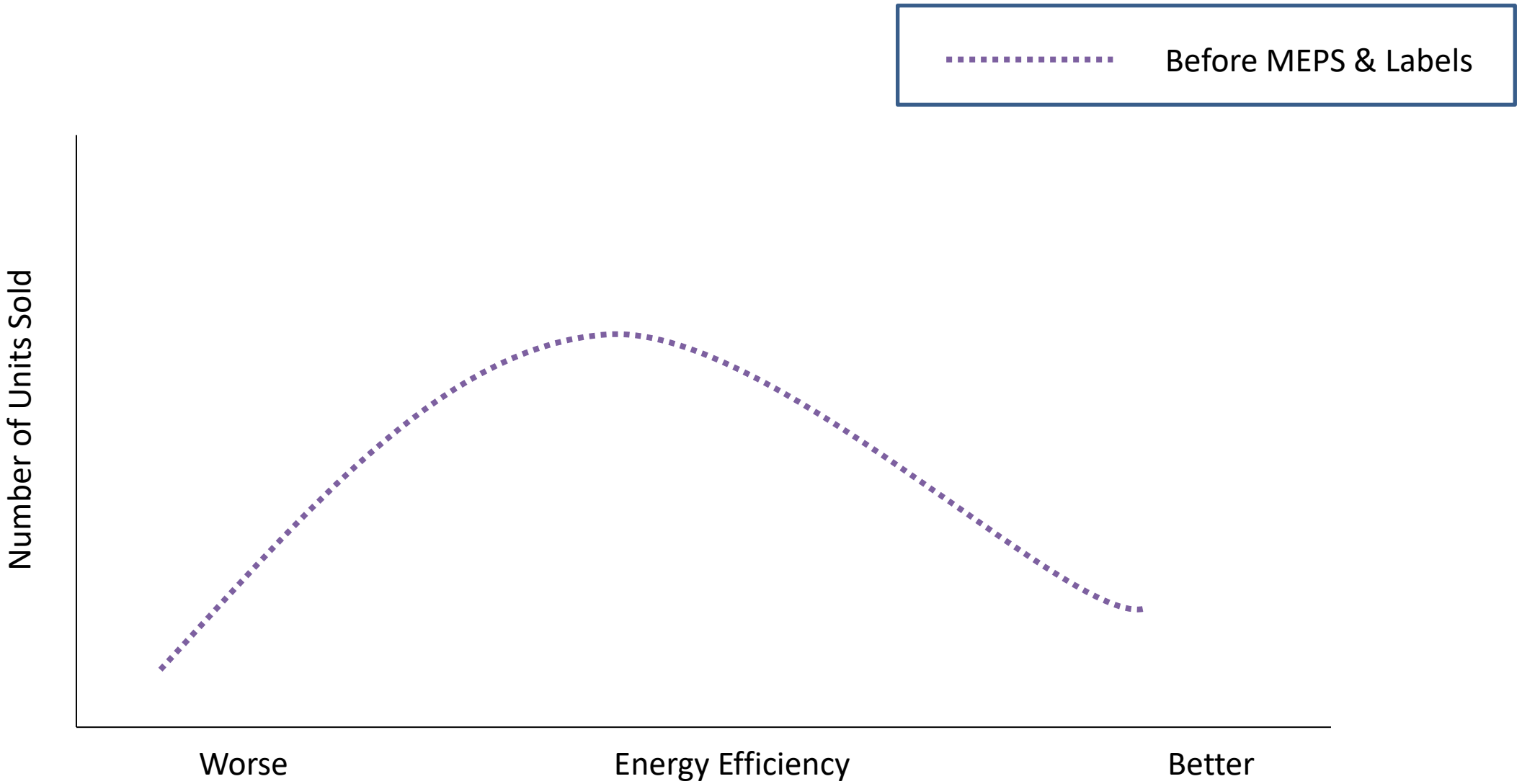
Minimum Energy Performance Standards (MEPS)

- Removal from the market of products that are deemed to have unacceptably low energy performance.

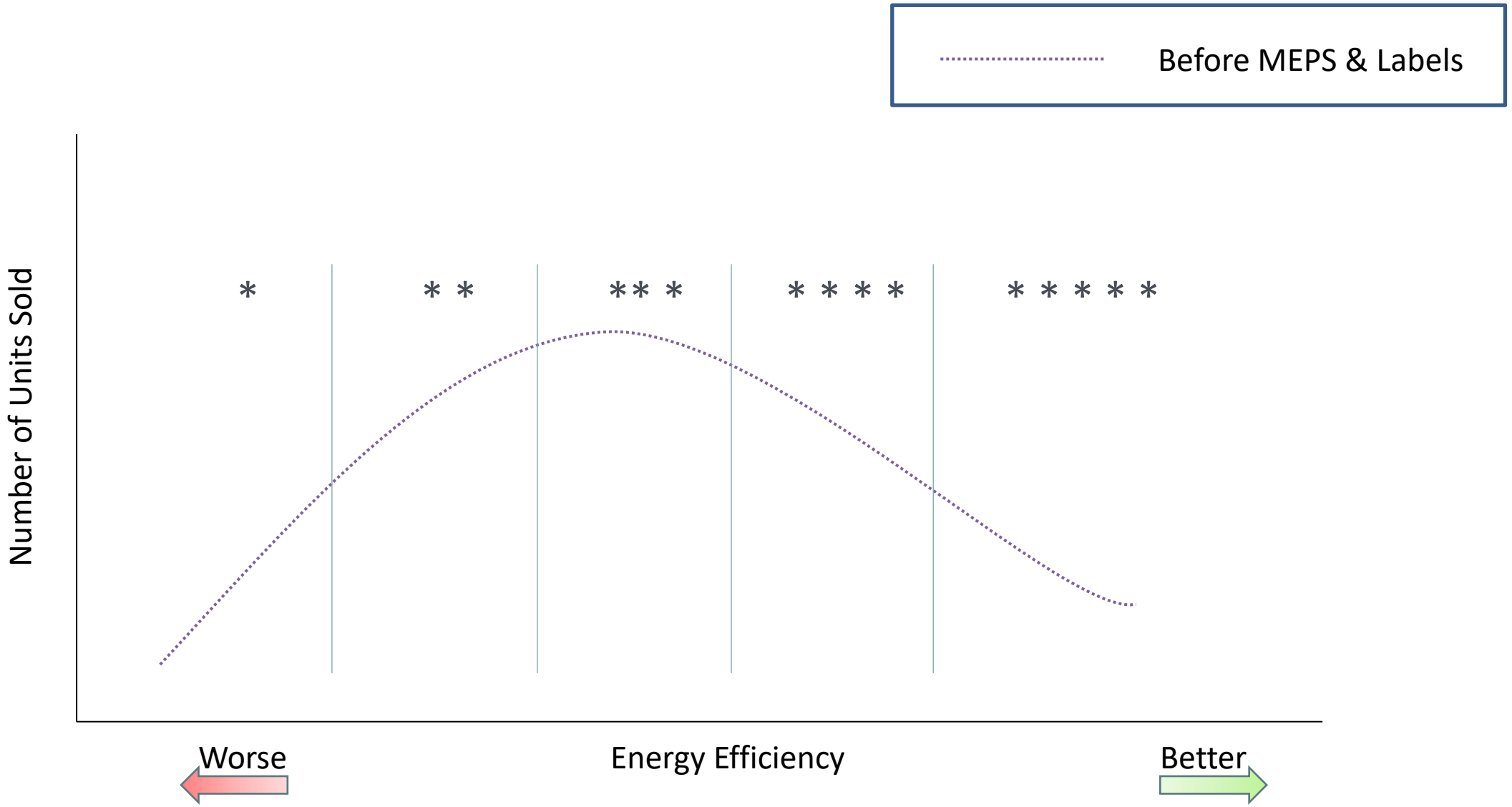
Labelling

- To categorise the energy performance of products to enable differentiation of the “better” products from the “less good” products.
  - *Consumers get more transparency for decision making*
  - *Allows effective implementation of other policy (eg procurement)*

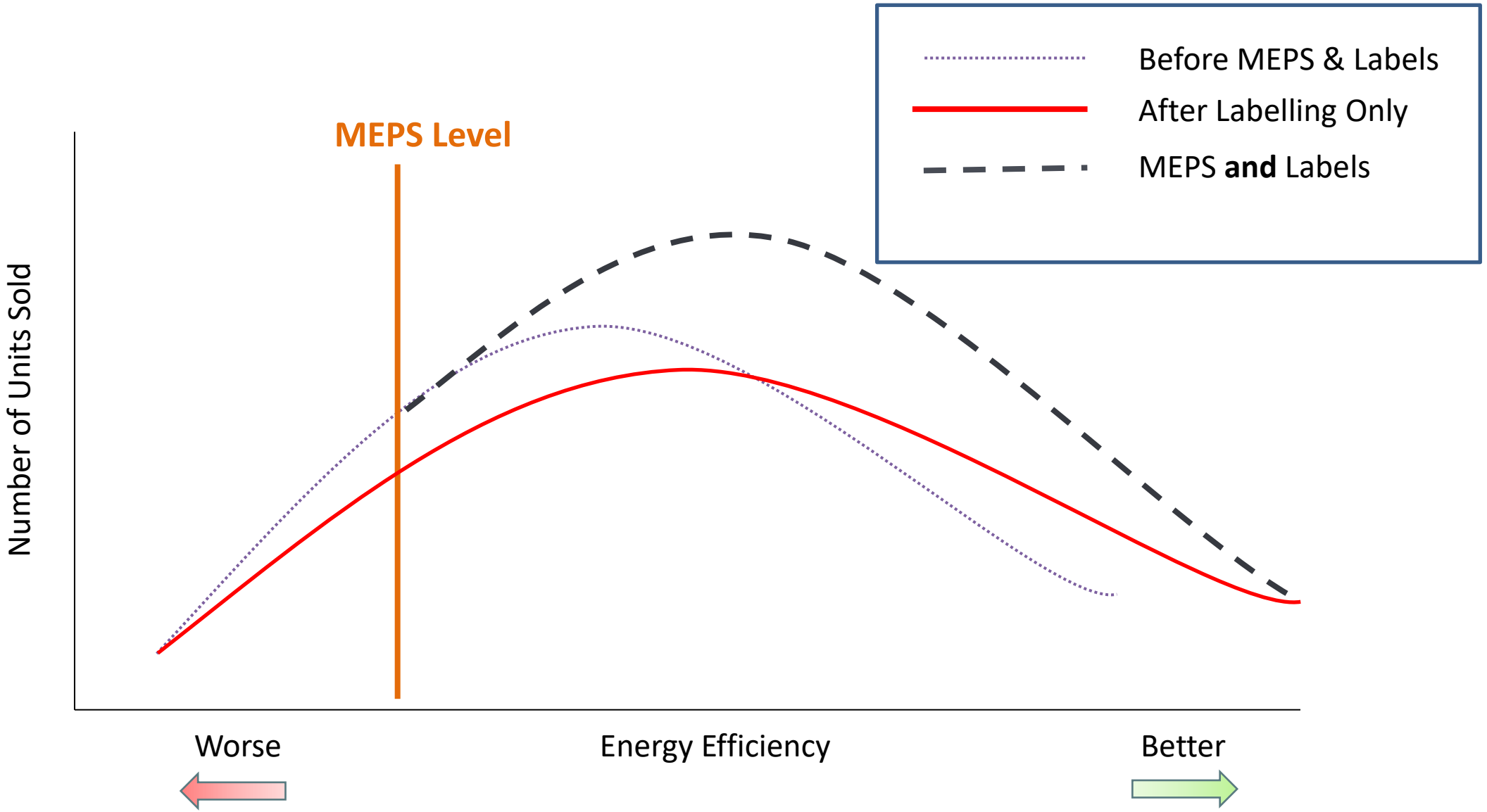
Distribution of Performance of Products in Market



Effect of Labelling: Transparently "Grading" Product Performance



Effect of MEPS and Labelling



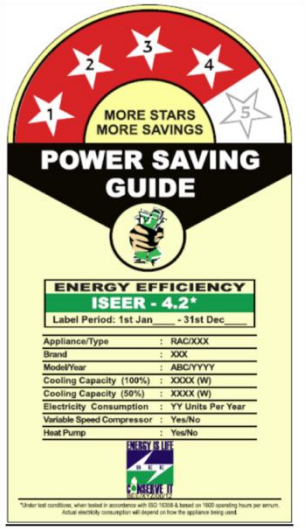
MEPS and Labelling around the world (2014)

	Minimum Standards	Comparative Labels
Europe	939	652
Asia Pacific	243	228
North America	92	44
Central America	43	88
Middle East	79	78
Africa	57	59
Total	~~1453~~ **1,900+**	**1149**

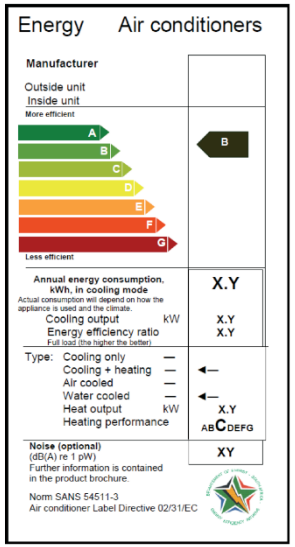
Source: Energy Standards and Labelling Programmes Around the World: in 2013, Department of Industry, Australia (2014)

Label Examples

Australia



Europe



China

USA

Korea

Standards and Labelling in Pakistan

Currently Voluntary for Fans

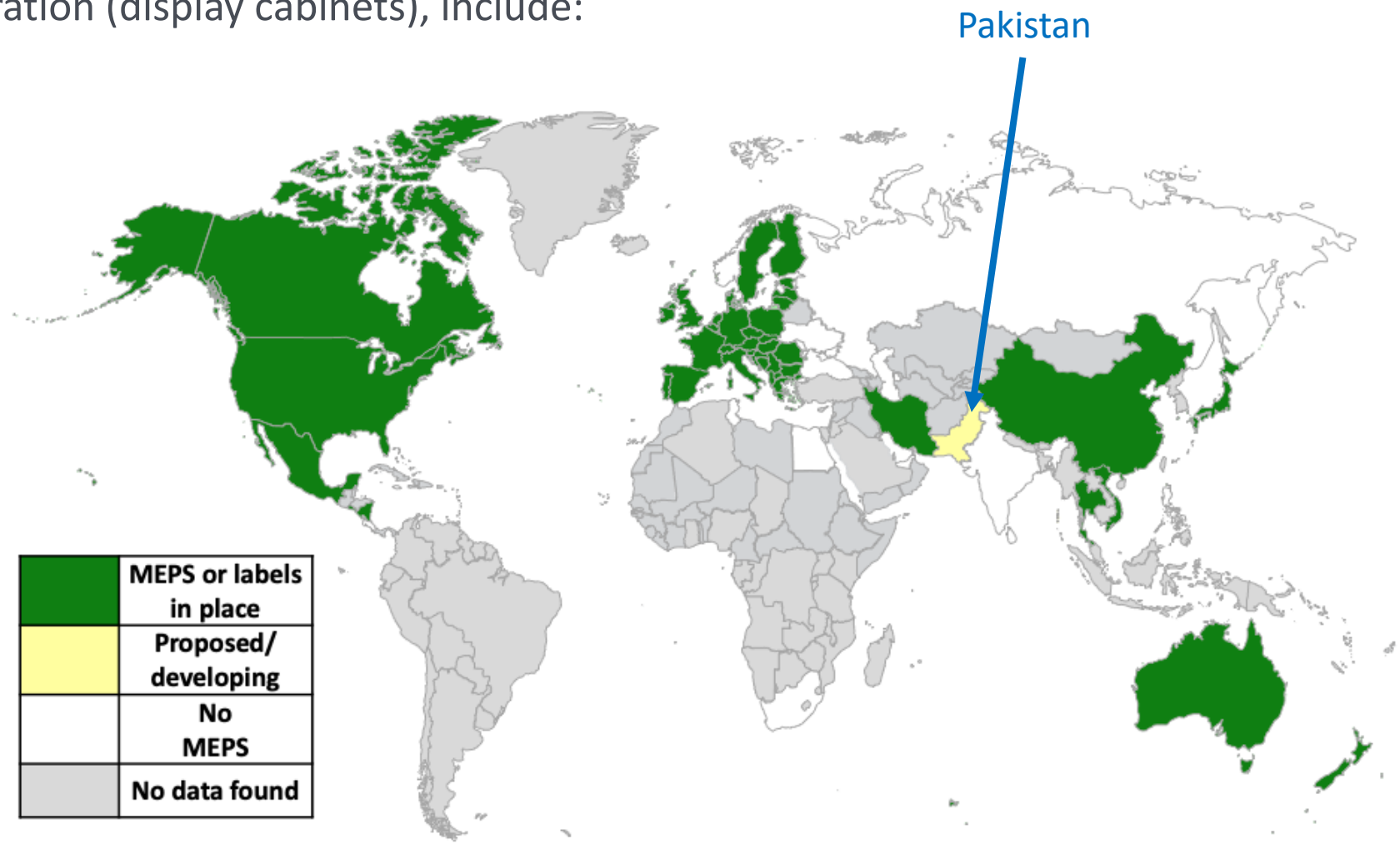
Soon to be Mandatory

- **Fans**
- Air Conditioners
- Refrigerators
- LED lights
- **Electric Motors**
- **Water Heaters**
- ***Commercial Refrigeration***

Commercial refrigeration standards and labels policies around the world

Countries with standards and/or energy labels for commercial refrigeration (display cabinets), include:

- Australia
- China
- El Salvador
- European Union
- Iran
- Mexico
- New Zealand
- Nicaragua
- Switzerland
- Thailand
- Vietnam



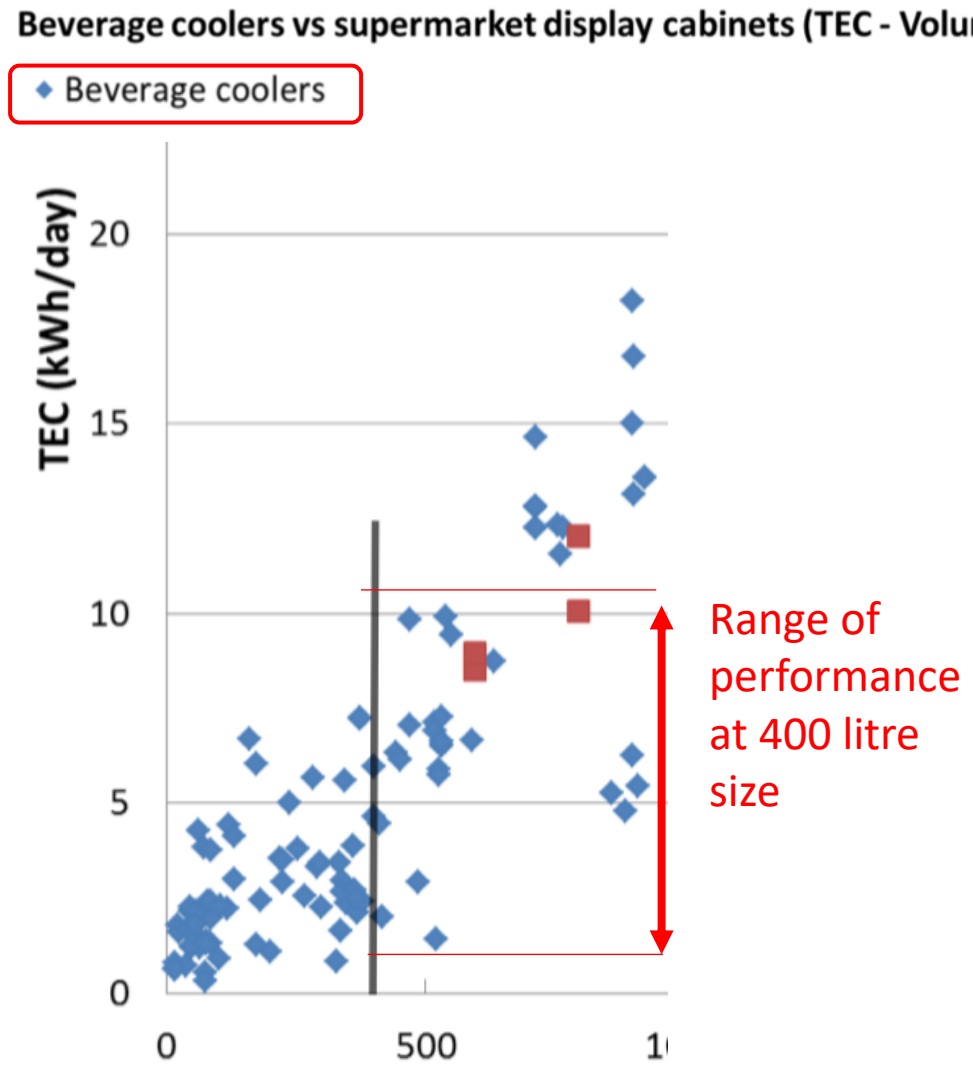
Scope

The ISO (global) test methods

For beverage cabinets:

- **ISO 22044**: [2022] *Commercial beverage coolers — Classification, requirements and test conditions* (Released January 2022)
- Developed for the beverage sector
- To sell drinks at temperatures specified by drinks manufacturers
- Performance: kWh per litre storage volume
- Energy test with doors closed
- Method includes pull-down and half reload tests

There is scope to improve performance (EU data from 2014)



Source: European Commission JRC, 2014 report on beverage coolers in support of the EU ecodesign and energy label regulation development

There is a wide range of performance for each size of cabinet

The best cabinets consume less than half of worst cabinets

- Data shown based on internal storage volume (litres)
- TEC is 'Total Energy Consumption'
- IVC4 means Integral Vertical Chilled with glass door (ISO 23953 class name)

Market Summary

Supply and Demand Sides of the market

SUPPLY SIDE

- Varioline
- Caravel
- Waves
- PEL
- National
- A few other manufacturers

DEMAND SIDE

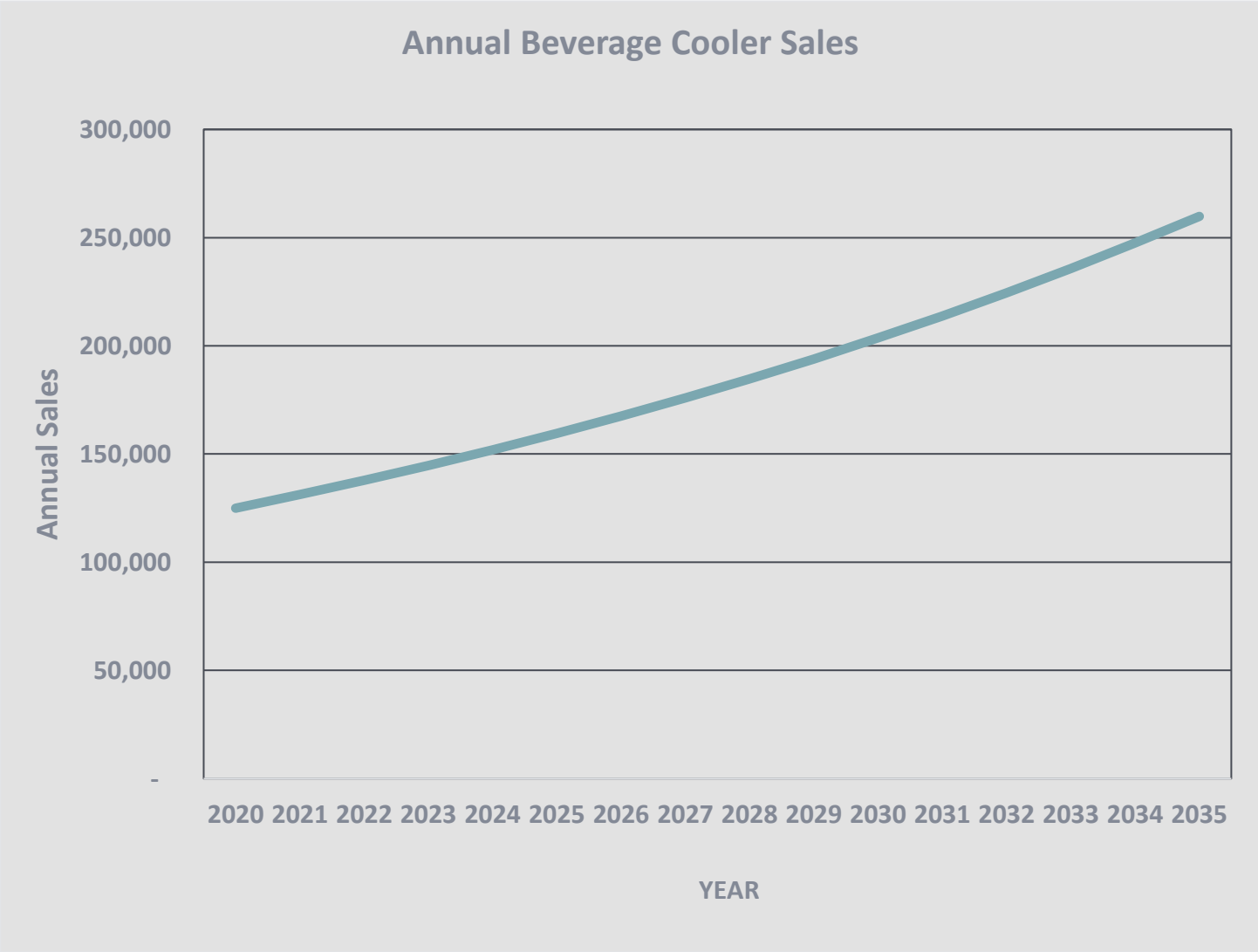
- Demand side is divided into two main segments:
  - Three large global beverage and food companies – **86%**
  - Milk Companies, Private Bakeries/grocery stores, and small shops – **14%**
- There are large bakery / grocery chains which all buy Visi Coolers for their products. Some of the big ones have a countrywide network.

Sales, Stock and Lifetime

Sales, Stock & Lifetime

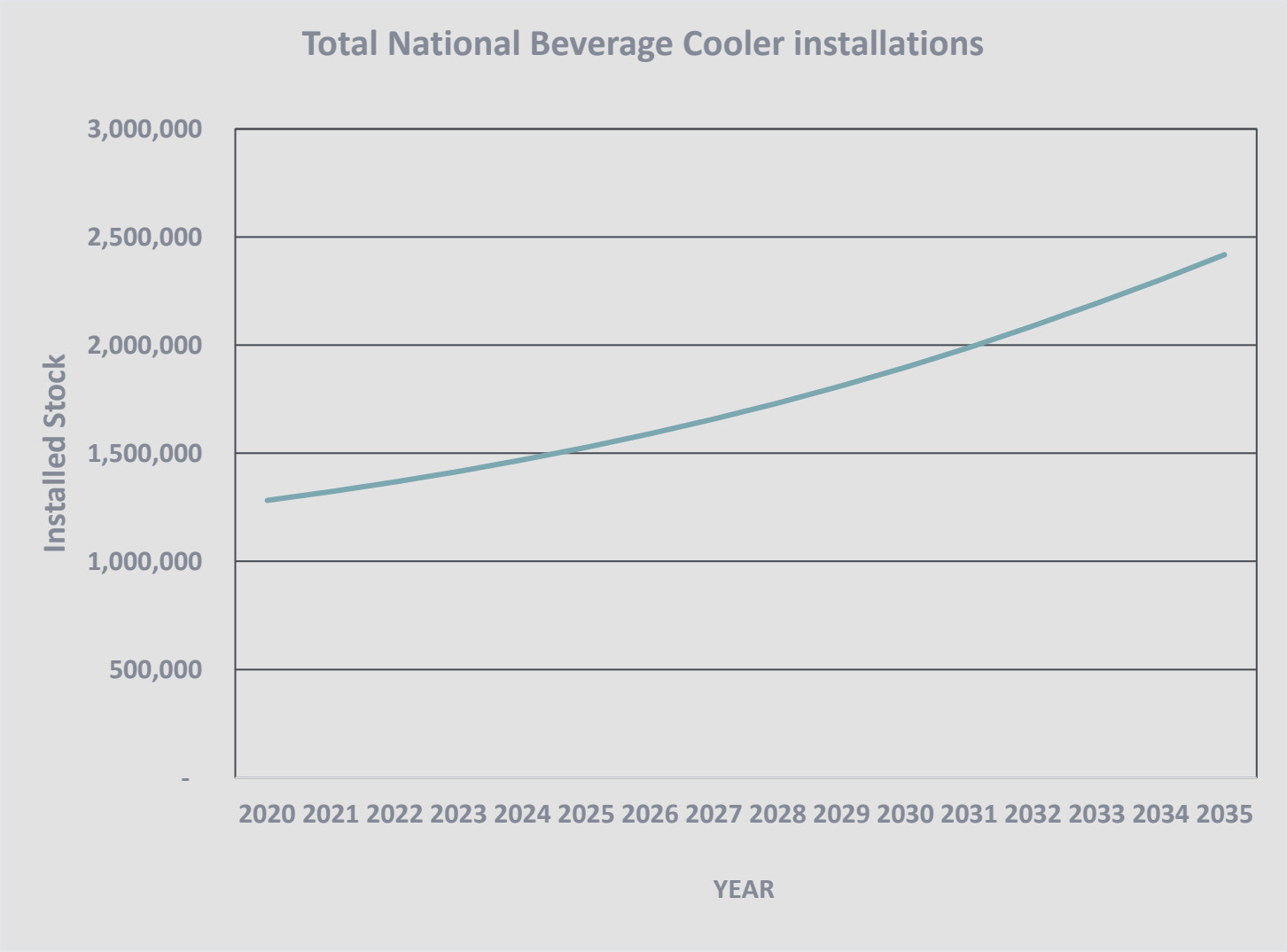
- According to estimates around **100,000 to 125,000** new visi coolers enter the market on average each year.
- Estimated stock as per manufacturers; varies between **1.2 Million to 1.6 Million.**
- **80%** of the stock is comprised of the **400** Liter Visi Cooler. In most cases this is actually a 385 Liter capacity Visi.
- Other common sizes are the 250 Liter and the 550 Liter
- Current Sales Growth is estimated at 05% to 6%
- Some migration currently also happening from Chest Freezers to Visi Coolers to host beverages
- Lifetime is estimated to be ~ 10 to 12 years.
- A considerable number of coolers get refurbished and sent back into the market every year.
- Unaccounted for coolers !

Sales



- Average annual Sales = 125,000
  - Annual Growth rate = 5%

Stock



- Installations 2020 = ~1.28m
  - At agreed sales rates requires average lifetime = 12 years
  - Implies significant “second lifetime” outside “original ownership”
- Installations 2035 = 2.4m
  - at the sales growth rate = 5%
- Savings
  With the adoption of draft policies, savings potential extends beyond 6.5 TWh in the next ten years, with over 4.4 MT of CO2 emissions avoided.

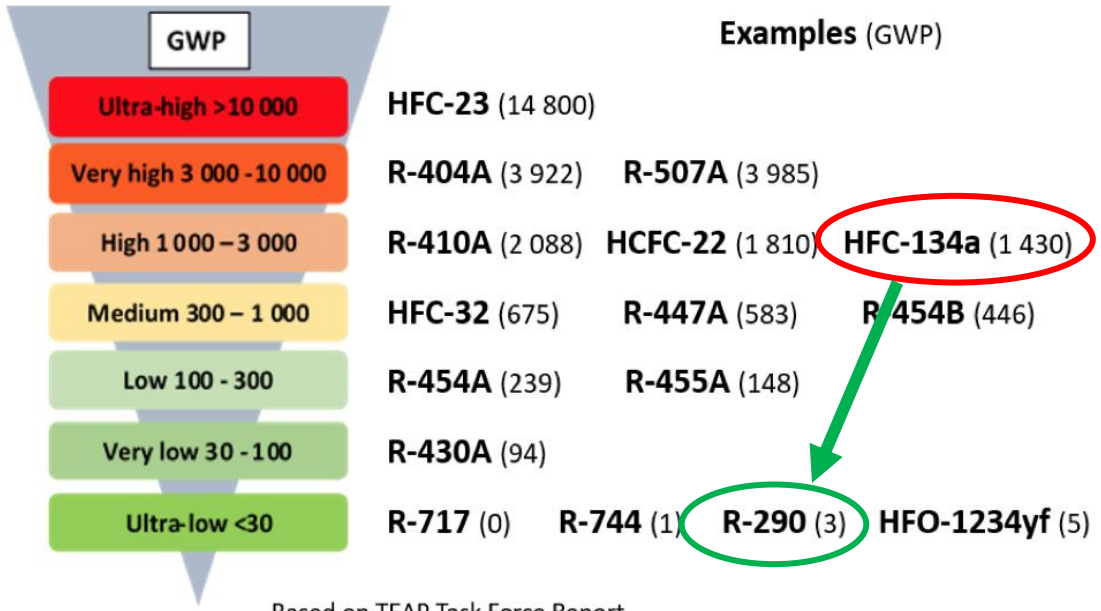
Refrigerants

Refrigerants and Parts

- R 134a has been the refrigerant of choice and that is the one installed in vast majority of the current stock.
- Some manufacturers have the experience of working with R 290 and driven by MNCs some of the Visi Cooler industry will also shift to R 290 during 2022.
- Manufacturers have come up the curve as far as R290 is concerned and mainly because of Unilever and Engro who got them to use this refrigerant for their respective ice cream brands: Walls and Omore.
- The target date for transition was Jan 2022 for some manufacturers and buyers.
- Some of the big buyers are concerned with potential maintenance issues with more efficient refrigerants as they are more flammable.
- Compressors based on R290 are inherently more efficient.

Refrigerants and Visi's in Pakistan

- A vast majority of Visi Coolers deploy R134a however option for R290 hydrocarbon refrigerant is now being offered however a 100% shift will take up to ~ 3 years.
- 100% of household refrigerators sold in the EU (and most in the rest of the world) are now using hydrocarbon refrigerants (R290, R600a)
- Safety for commercial refrigerated cabinets is set out in IEC 60335-2-89 and the maximum charge limit for flammable refrigerants was increased from 150g to just under 500g in 2019 (subject to certain safe design features)



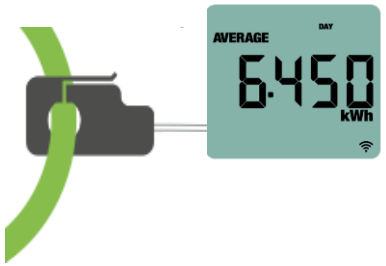
Source of diagram: UNEP OzonAction Kigali Fact Sheet 3, see http://www.gluckmanconsulting.com/kigali-amendment/

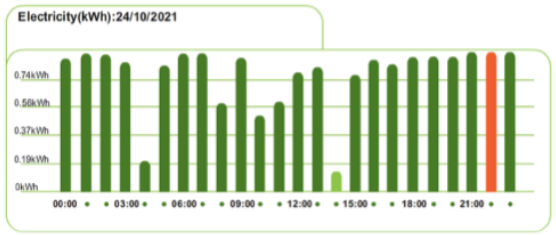
IEC 60335-2-89: Ed.3 2019 Household and similar electrical appliances - Safety - Part 2-89: Particular requirements for commercial refrigerating appliances and ice-makers with an incorporated or remote refrigerant unit or motor-compressor.

Energy Consumption & Test Results

Cabinet performance benchmarks - measured in shops

400 litre chilled vertical glass door beverage cabinet (Visi)





Visi coolers in shops, October 2021

- Measurements with energy meter in 9 shops around Lahore
- Cabinets in normal use, with customers
- Owners switch cabinets off at night (like with an EMD)
- Typical daily consumption around 10 kWh/day to 15 kWh/day for 400 litre cabinet (extrapolated to 24 hours running)

More detail to follow in Stuart and Abdul Rehman's presentations.

Thank you

Questions?

Draft final technical regulations

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Aim of Presentation

Presentation *will* try and cover the *technical* aspects of the draft regulation:

- Walk you through the draft, clause by clause, to ensure all is clear.
- Highlight changes from previous drafts.

Presentation *will not* try and cover the *process* aspects of the draft regulation, but will give an indication of:

- Registration process, reporting and charging requirements – developed by NEECA as part of the "administrative actions".

Please ask specific and/or general questions ***as we go along.***

Article 1. Scope
Article 2. Terms & Definitions

Integral vertical commercial beverage coolers between 0.5m and 2.2m in height. CHANGE

Where:

- **Commercial Beverage Cooler:** A refrigerated cabinet to sell and/or display pre-packaged beverage products that are non-perishable, which is designed to chill products loaded at ambient temperature to the defined storage temperature class within a specified time, and for which the customer is allowed direct access to the products.

- **Height**: The vertical distance from the floor to the top of the commercial beverage cooler.

All other terms and definitions as defined in ISO 22044 *(to be a PS standard when adopted by PSQCA)*

Article 1. Scope
Article 2. Terms & Definitions

Excluded:

- Equipment that is powered by energy sources other than electricity,
- Off-grid refrigeration equipment.
- Equipment specifically tested and approved for the storage of medicines or scientific samples,
- Cabinets that operate by means of a separately housed condensing unit (remote cabinets).

Fully aligns with ISO 22044

Article 2. Terms & Definitions: 2.3: Family of Models

A family is where two or more models are in the same family of models if the requirements of this section are satisfied in relation to the models and the family.

- **Parent model requirements** There must be a single model (the *parent model*) for each family that is manufactured by one manufacturer and that has essentially identical electrical, physical, and functional characteristics that affect energy consumption. The parent model, when compared to the other models in the family, must:
  - have the highest, or the equal highest, specific energy consumption;
  - meet the requirements of the coldest, or the equal coldest M-package temperature class when tested in accordance with the relevant test standard;
  - have the largest, or the equal largest vertical opening;
  - have the greatest, or the equal greatest horizontal distance between the front and the rear of the cabinet; and
  - be included on a test report that was prepared prior to the application for registration for any model that is a member of the family.

- **Family model requirements:** Each model in the family must meet the requirements of:
  - the same M-package temperature class as the parent model; or
  - a warmer M-package temperature class than the parent model.

Caution: One "family member" impinges requirements, penalty applies to all family members

Article 3. Measurement Methods and Performance Requirements: 3.1 Test method and rated conditions

Testing in accordance with the requirements of ISO 22044

Rated Conditions **CHANGE**

- M-can temperature class: K1 (min temp 0.0°C, max temp 7.0°C, ave temp equal to or less than 3.5°C)
  - Appears to be the most used in Pakistan

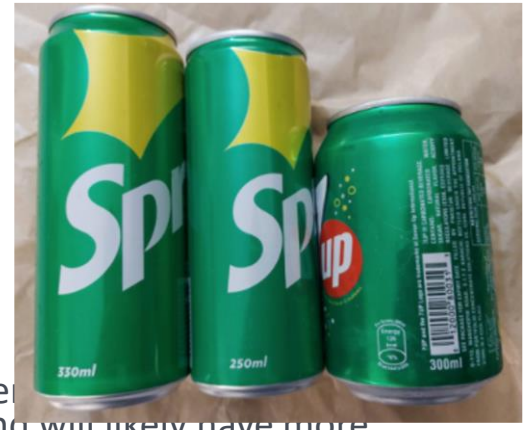
- Climate Class: CC2 (32.2°C, 65% Relative Humidity)
  - Recognise a number of suppliers/purchasers would like CC3 (40.6°C, 75% Relative Humidity)
  - Average Annual Temperatures in Pakistan: Karachi 27.1°C; Hyderabad 27.6°C; Peshawar 22.9°C; Quetta 17.2°C; Islamabad 22.1°C – so CC2 closer to "real life"
  - DOES NOT stop purchasers requiring additional testing at CC3 for energy consumption, pull down or half load tests.

- *A slight deviation from the regulations: Cans and Bottles*

Cans and Bottles

- Test method suggests 330ml cans
- Currently draft regulations specify 300ml cans
- Pakistan Aluminium Beverage Can Limited (PABC) produces 250ml, 300ml, 330ml and 355ml cans.
  - Suggestion 250ml accounts for 75% of sales.

Capacity (ml)	Length(mm)	Diameter (mm)
250	135	53
300	107.5	66
330	146	58
330	115	65



- Energy test st

But….

- Bottles varying shapes and materials, and resulting difference in loading/shelf spacing, *will* result in differ impact on "stable state" consumption and thus MAY impact the constants used in the EEI calculation, and will likely have more impact on reproducibility. Therefore, propose continue to use cans.
- Again buyers can require a second test with bottles

Article 3. Measurement Methods and Performance Requirements: 3.2 Calculation of energy efficiency index

Regulation to be based on an Energy Efficiency Index (EEI) – aligns with Europe

$$EEI = \frac{TEC}{RTEC} \times 100$$

where:

TEC is the measured Total Energy Consumption over (24 hours) in kWh

RTEC is the Reference Total Energy Consumption (over 24 hours) in kWh of a beverage cooler of the same volume:

$$RTEC = 2.1 + (0.0067725 \times Vg)$$

where:

Vg is the measured **gross** volume

RTEC formula simplified as constants already adjusted for CC2 and K1 conditions in line with EU methodology

Article 3. Measurement Methods and Performance Requirements: 3.3: Minimum energy performance (MEPS) requirements

Date Effective	Maximum Allowable EEI
1 January 2023 – 31 December 2024	100
1 January 2025 onward	80

ALL products below these thresholds will be banned from the market

MEPS requirements likely to be issued by PSQCA as an Annex to ISO 22044 when adopted

(Note no pull-down or half load requirement in the regulations)

Article 3. Measurement Methods and Performance Requirements: 3.4: Pakistan Energy label thresholds

Star Level	Maximum Allowable EEI
1 Star	100 (prior to 2025)
2 Star	80
3 Star	65
4 Star	35
5 Star	10

- Pakistan Energy Label required to be displayed at the point of sale, on all promotional material (including websites where the product is featured), and when being delivered to the end-user.

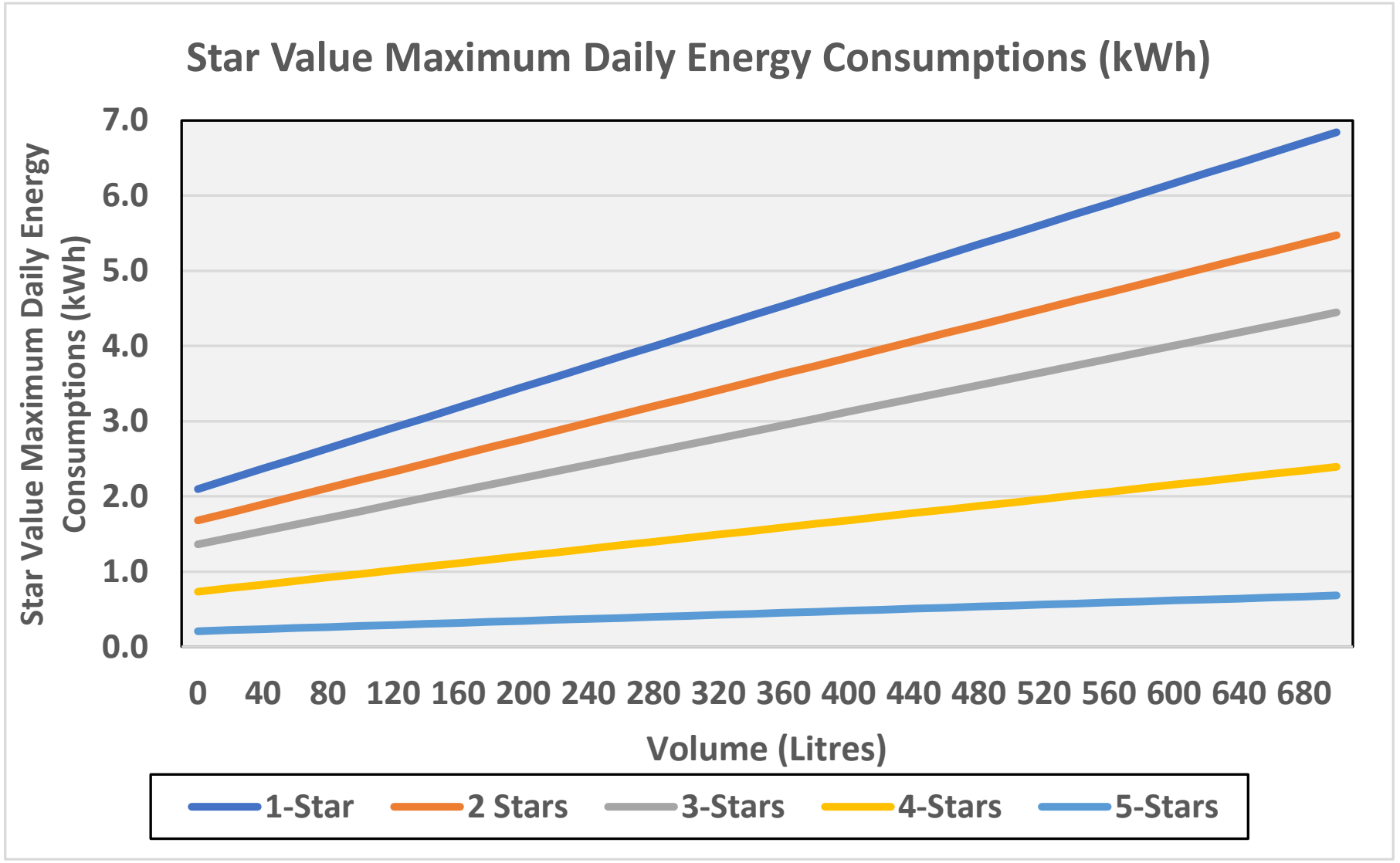
Labelling requirements will to be issued by NEECA in an administrative ruling under the National Energy Efficiency and Conservation Act 2016 and will include additional requirements

What that REALLY means

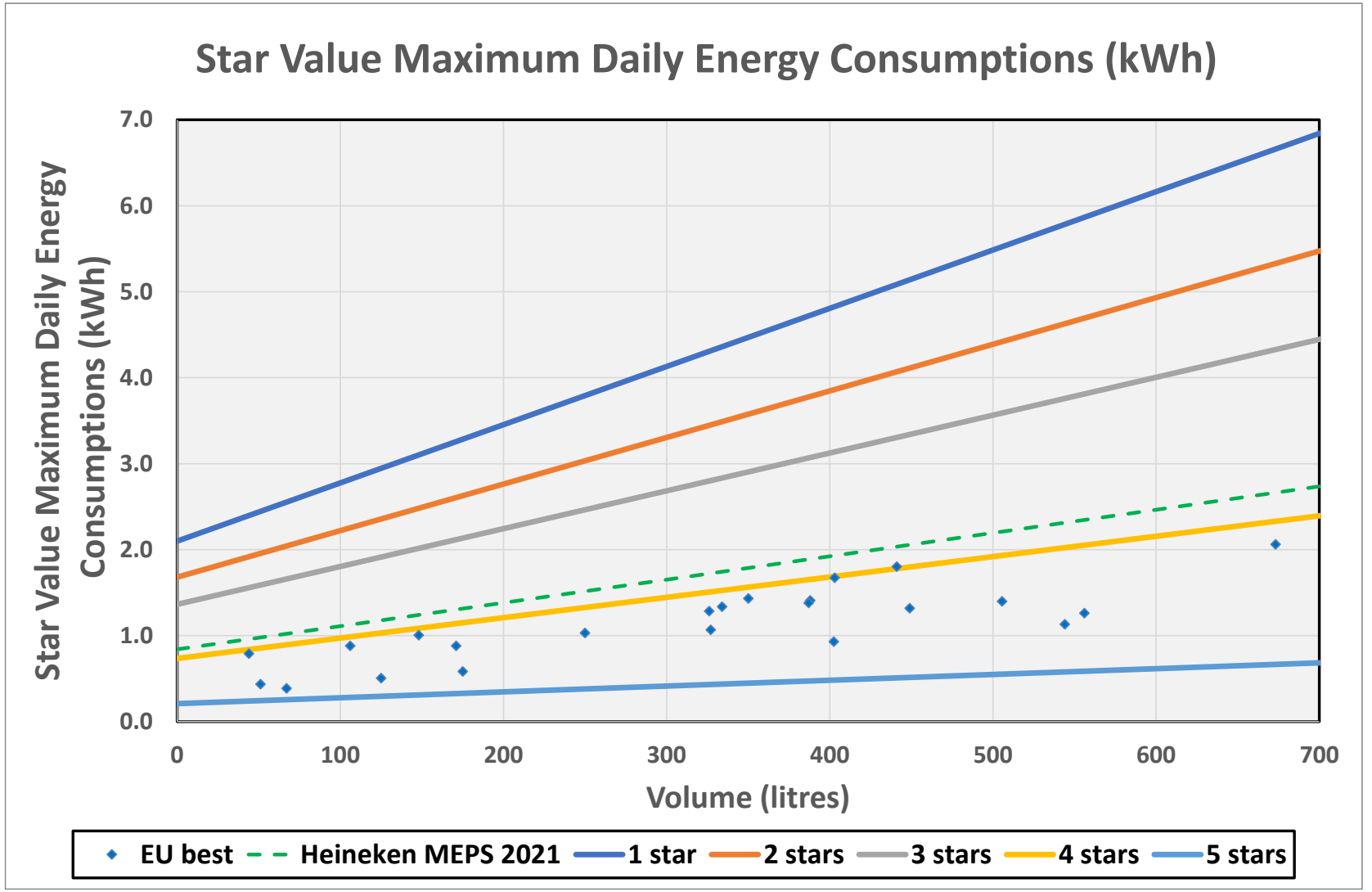
Star Value Maximum EEI					
Volume (Litres)	1-Star	2 Stars	3-Stars	4-Stars	5-Stars
360	…	…	…	…	…
380	100	80	65	35	10
400	**100**	**80**	**65**	**35**	**10**
420	100	80	65	35	10
440	…	…	…	…	…

Star Value Maximum Daily Energy Consumptions (kWh)					
Volume (Litres)	1-Star	2 Stars	3-Stars	4-Stars	5-Stars
360	…	…	…	…	…
380	4.67	3.74	3.04	1.64	0.47
400	**4.81**	**3.85**	**3.13**	**1.68**	**0.48**
420	4.94	3.96	3.21	1.73	0.49
440	…	…	…	…	…

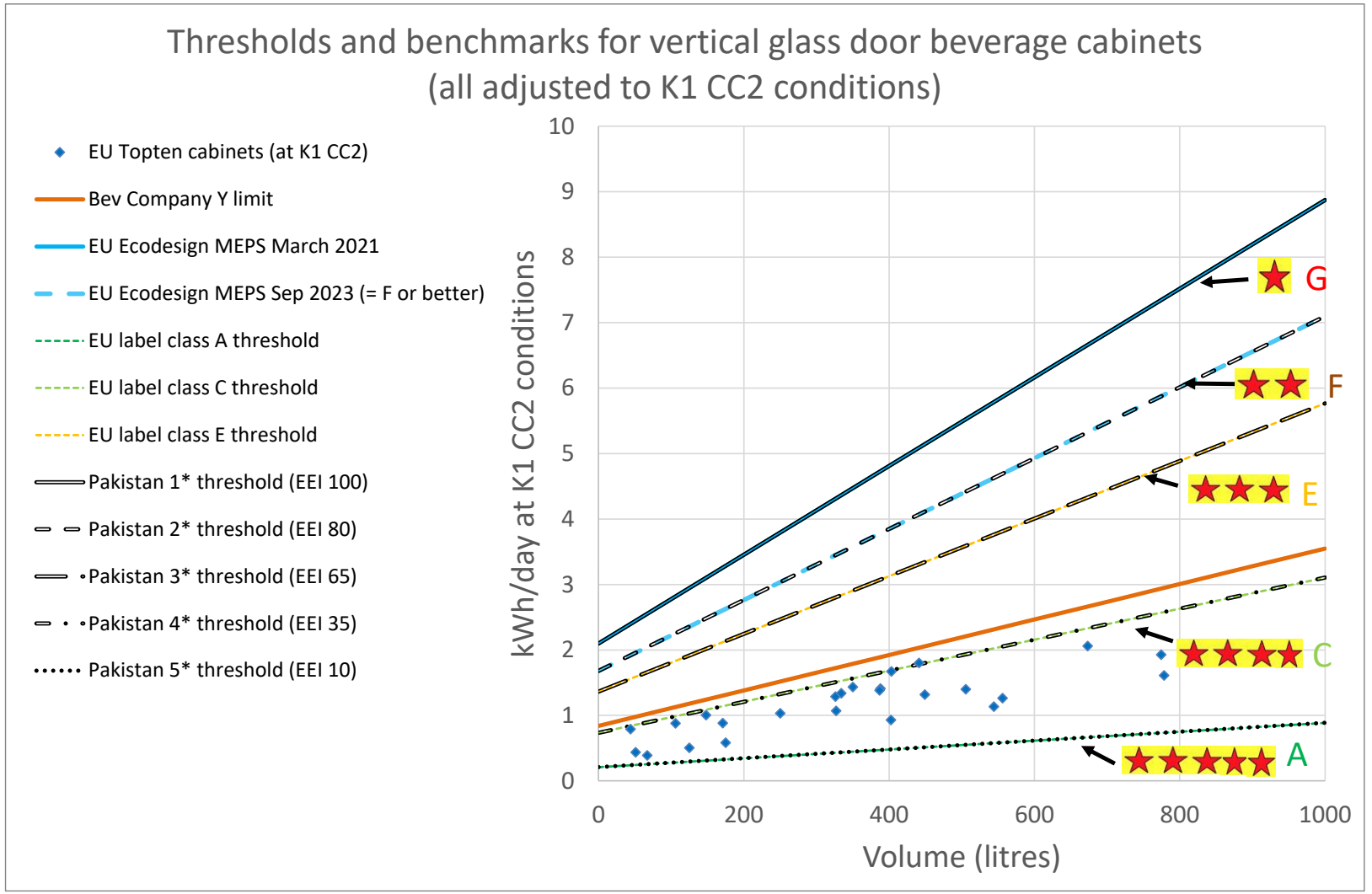
Article 3. Measurement Methods and Performance Requirements: 3.3 MEPS and 3.4: Pakistan Energy label thresholds

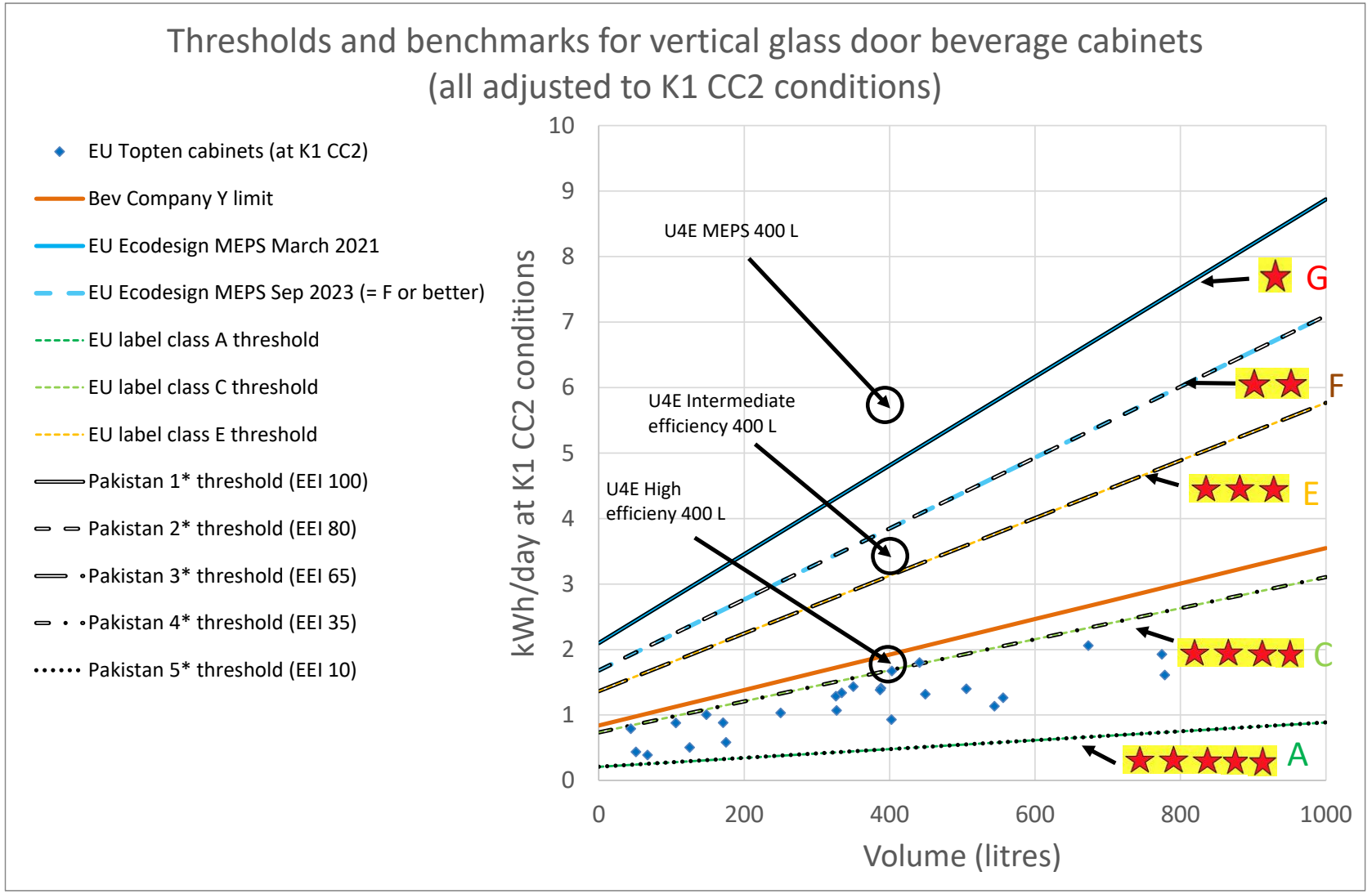


Article 3. Measurement Methods and Performance Requirements: 3.3 MEPS and 3.4: Pakistan Energy label thresholds



Article 3. Measurement Methods and Performance Requirements: 3.3 MEPS and 3.4: Pakistan Energy label thresholds




Thresholds and benchmarks for vertical glass door beverage cabinets
(all adjusted to K1 CC2 conditions)
EU Topten cabinets (at K1 CC2)
Bev Company Y limit
EU Ecodesign MEPS March 2021
EU Ecodesign MEPS Sep 2023 (= F or better)
EU label class A threshold
EU label class C threshold
EU label class E threshold
Pakistan 1* threshold (EEI 100)
Pakistan 2* threshold (EEI 80)
Pakistan 3* threshold (EEI 65)
Pakistan 4* threshold (EEI 35)
Pakistan 5* threshold (EEI 10)
kWh/day at K1 CC2 conditions
Volume (litres)
U4E MEPS 400 L
U4E Intermediate efficiency 400 L
U4E High efficieny 400 L
G
F
E
C
A

Article 3. Measurement Methods and Performance Requirements: 3.5: Refrigerant and foam blowing agent + 3.6 Safety requirements

Maximum ozone depletion potential (ODP) and 100-year global warming potential (GWP – 100 year) from **1 January 2025**

Maximum GWP (100-year)	Maximum ODP
150	<1

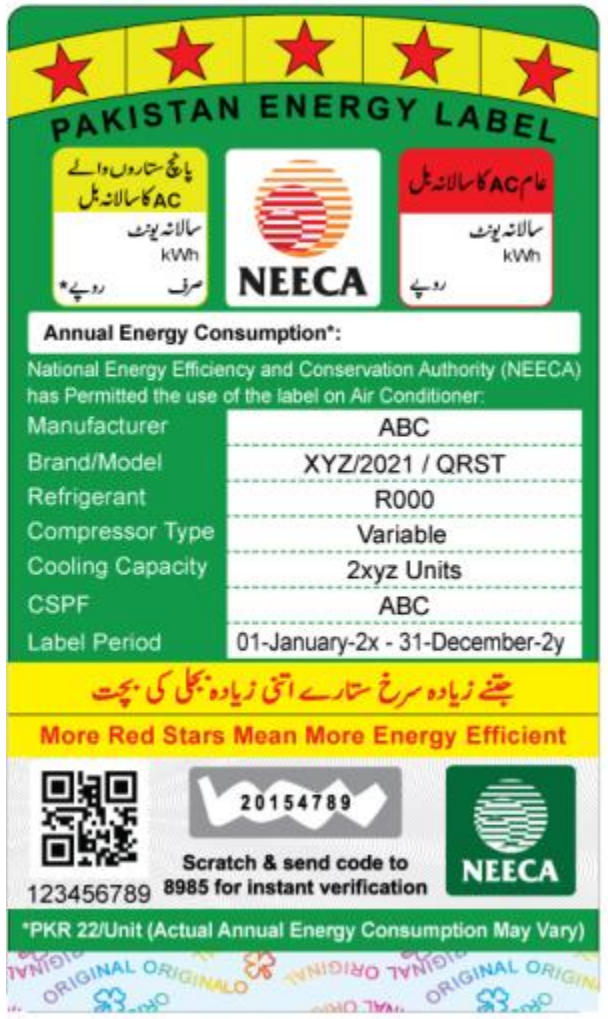
Requirement delayed to 2025 to align with most current transition plans

GWP and ODP values in Annex 1: SCIENTIFIC ASSESSMENT OF OZONE DEPLETION: 2018

Likely to be slightly updated based on revisions to the GWP values

Safety requirement: equipment shall comply with IEC 60335-2-89: 2019

Label Example: Proposed Air Conditioner Label



Article 3. Measurement Methods and Performance Requirements: 3.8: Product information requirements

In addition to the Pakistan Energy label, a further information label will be required which includes

- Type of equipment (i.e., beverage cooler);
- Model number;
- Family model name;
- Country where the product was manufactured;
- Year of manufacture;
- Name and address of the manufacturer;
- Gross volume (litres);
- Annual energy consumption in kWh per year (equal to TEC * 365)
- Refrigerant and foam-blowing agent designation, including their ODP and GWP 100-year.

Article 3. Measurement Methods and Performance Requirements: 3.7: Product registration

- ALL models to be placed on the market will be required to registered by NEECA *prior* to sale.
- Registration will require:
  - Product (or product family) test report from an accredited laboratory
  - Completion of a “form” on product characteristics and performance, company identifier information,…
  - A fee will be charged for registration and, potentially, on a per product sale basis

Article 3. Measurement Methods and Performance Requirements: 3.7: Product registration

Test Report Requirements (see handout)

- Testing laboratory ID details
- Client (Not applicable in the case of in-house testing laboratory)
- Test methods and conditions
- Energy consumption of beverage cooler
  - Product identifier
  - Test results (consumption, volume,….)

Article 3. Measurement Methods and Performance Requirements: 3.7: Product registration

- Likely registration information requirement:
  - Company information
    - Name, contact, tax and registration number, chamber membership/association, …
  - Product identification and performance information
    - Brand, family and model name; size, rated capacity (volume and can/pet bottles), rated and measured volume, presence of EMD, rated and tested energy consumption, ….
  - Details of laboratory used for testing and test report
  - Estimate of sales numbers and regions
  - “Official” company documentation:
    a. Company brochure, product brochure/catalogue, details of payment.

Thank you

Questions?

Energy efficiency testing of ‘Visi Coolers’ using ISO 22044

Workshop at AVARI- Lahore

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Overview

Overview of energy tests for Visi's: ISO 22044

- ISO 22044:2021 was made by beverage industry specialists, including some major beverage manufacturers
- ISO 22044 reflects the latest thinking towards a 'shared standard' for the industry - though individual beverage company test protocols remain in use
- Published December 2021 and available from: https://www.iso.org/standard/72395.html
- A Pakistan Standard version will be adopted.

Note: ISO 22044 is largely identical to EN 16902 on which European energy labels for beverage cabinets are based.


INTERNATIONAL STANDARD

ISO/FDIS 22044

Commercial beverage coolers — Classification, requirements and test conditions

Meubles frigorifiques de vente pour boissons — Classification, exigences et conditions d'essai

Testing Conditions

Key Test Conditions

Test Conditions

- M-can temperature Class:
  - K1 (min temp 0.0°C, max temp 7.0°C, average temp equal to or less than 3.5°C)
- Climate Class:
  - CC2 (32.2°C, 65% Relative Humidity)

- Should have uniform temperature distribution that is stable during the test.
- Air flow in the test room is not so important for energy test as doors are not opening during the test (ideally would be horizontal flow 0.1 to 0.2 m/s).

Process Flow

Overview of energy tests for Visi's in ISO 22044

Parts of the test relevant to energy labelling:

Gross Volume
- All cooled space within the cabinet

Load cabinet
- Cans, some with thermocouples

Stabilise temperatures
- 24 hours with stable temperatures

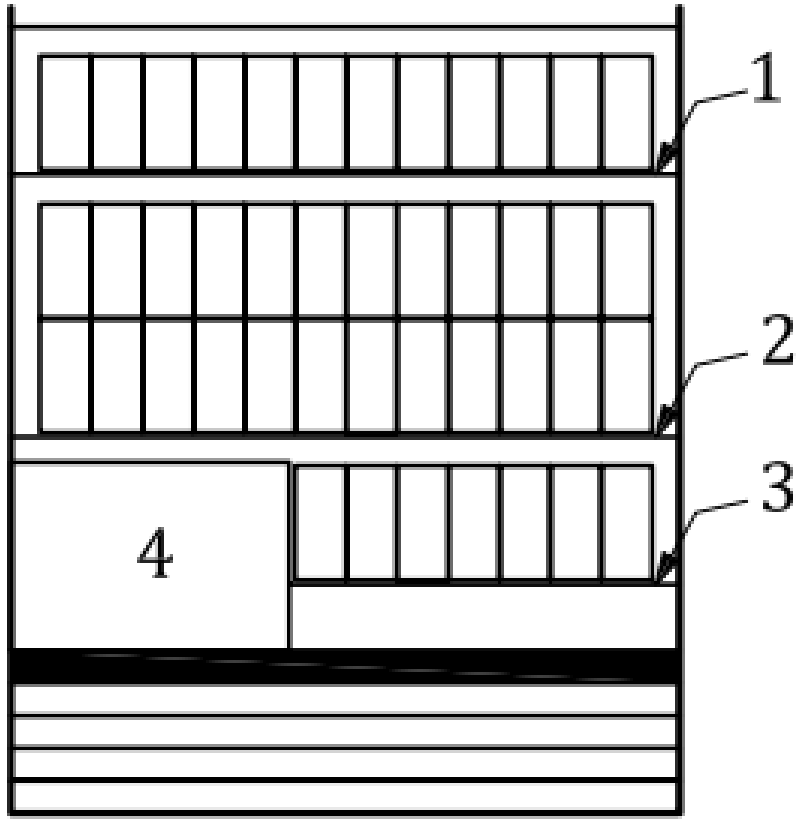
Temperature test
- 24 hours steady state test

Energy test
- 24 hours steady state test
- Lights on 12h; lights off 12h
- Impact of 'Energy Management Device' (if fitted)

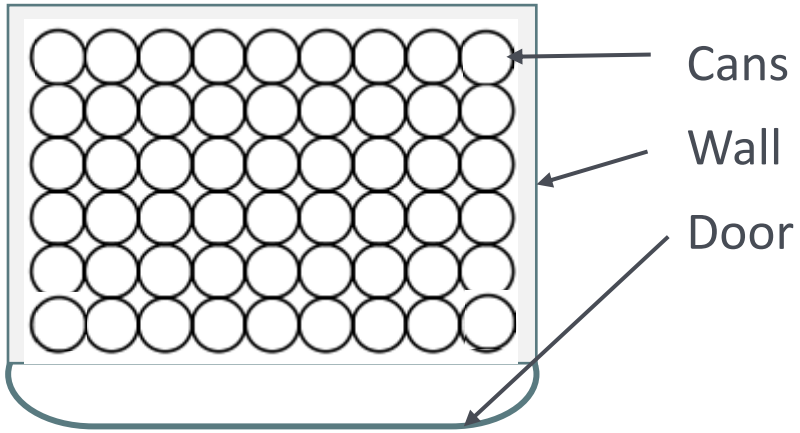
Other ISO 22044 tests (not used for energy label):

- Half-reload recovery test
- Seal of doors
- Durability of doors
- Water condensation

Nominal Beverage Cabinet Design



1. Top Shelf
2. Middle Shelf
3. Bottom Shelf
4. Compressor Box



Gross Volume Measurement

Parts of the test relevant to energy labelling:

Gross Volume
- All cooled space within the cabinet

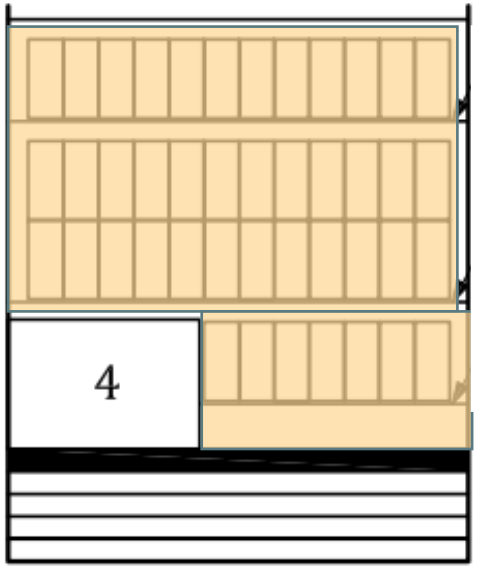
Load cabinet
- Cans, some with thermocouples

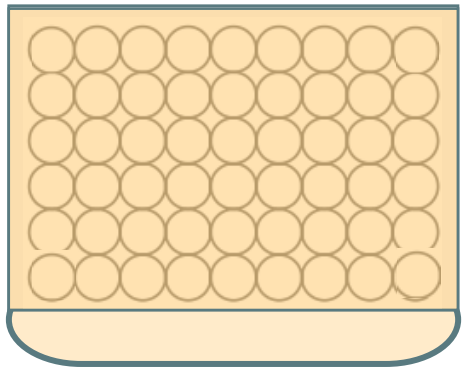
Stabilise temperatures
- 24 hours with stable temperatures

Temperature test
- 24 hours steady state test

Energy test
- 24 hours steady state test
- Lights on 12h; lights off 12h
- Impact of 'Energy Management Device' (if fitted)

Gross Volume





- Volume within the inside walls of the commercial beverage cooler
- When the gross volume is determined, internal fittings such as shelves, baskets, removable partitions, containers and interior light housings shall be considered as not being in place.
- The items below shall be considered as being in place (if present) and their volumes deducted:
  - the volume of control housings
  - the volume of the evaporator space
  - the volume of air ducts
  - space occupied by shelves moulded into the inner door panel

$$Vg = Height * Length * Width$$

Cabinet Loading, M-cans and Thermocouples

Parts of the test relevant to energy labelling:

Gross Volume
- All cooled space within the cabinet

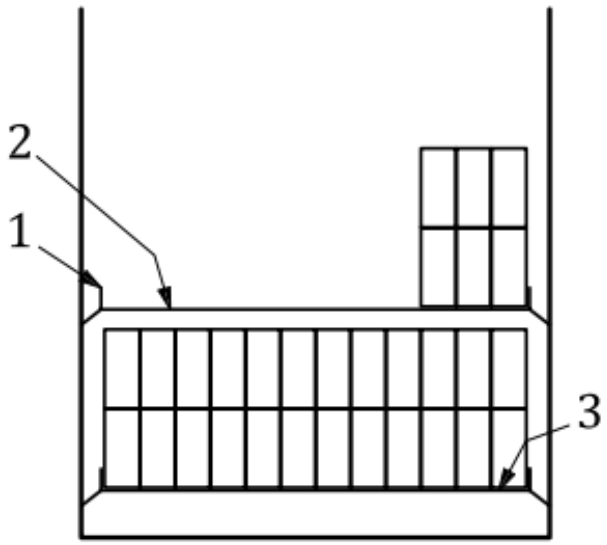
Load cabinet
- Cans, some with thermocouples

Stabilise temperatures
- 24 hours with stable temperatures

Temperature test
- 24 hours steady state test

Energy test
- 24 hours steady state test
- Lights on 12h; lights off 12h
- Impact of 'Energy Management Device' (if fitted)

Cabinet Loading



1. Side product stop
2. Second shelf
3. Bottom shelf

- Follow loading diagrams in the standard.
- Number of shelves to fit maximum load with evenly spaced shelves.
- All cans stand straight (no tilting or lying down); touching but no forcing
- Use double stack of cans (or single if that's all that fits on top shelf).
- Not three high.

Cabinet Loading

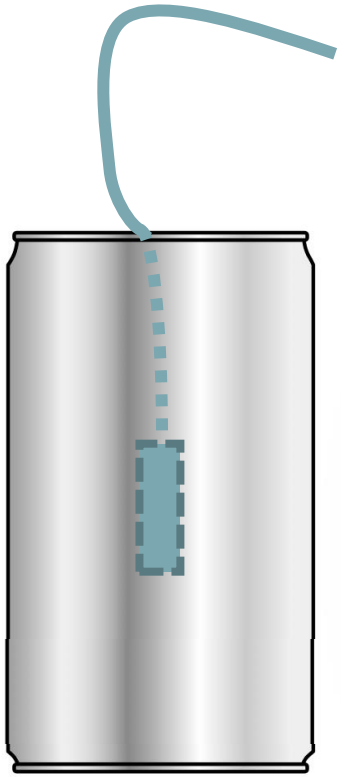
4 shelves =
3 cans high

5 Shelves, but not
evenly spaces

5 shelves,
evenly spaced

M-cans and Thermocouples

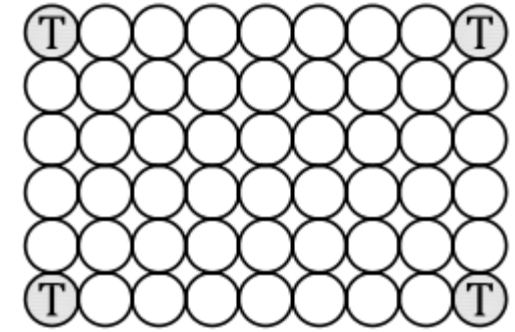
- M Can means the test can, it gives the information about the temperature inside the cabinet
- “M-cans” have a thermocouple at their geometric centre
- Product temperatures within the cabinet measured by “M-cans”

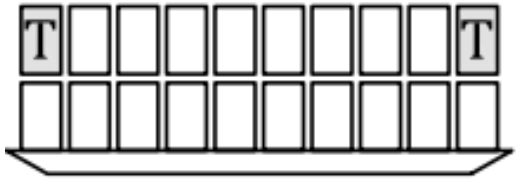


An “M-can” with thermocouple

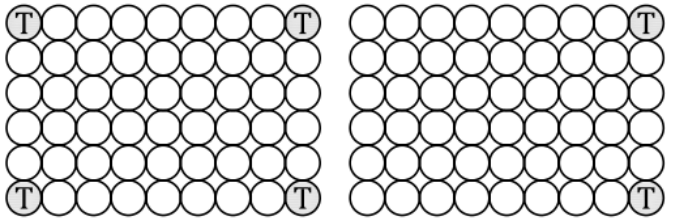
M-can loading

- M-cans to be loaded in positions as instructed by standard – varies by product design.
- Single door example (each shelf):

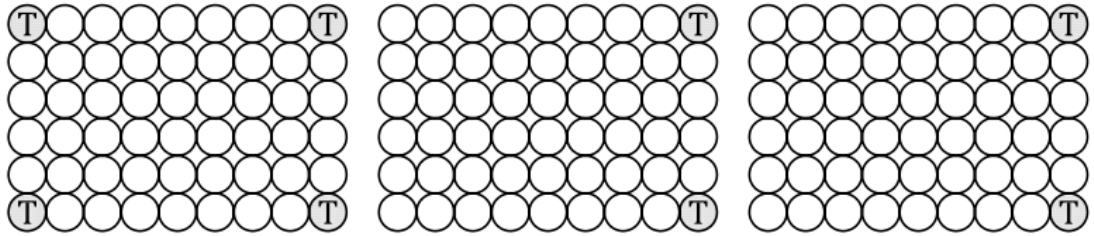




2-door example



3-door example



PICTURE OF THERMOCOUPLES THROUGH THE DOOR

Stabilise Temperature

Parts of the test relevant to energy labelling:

Gross Volume
- All cooled space within the cabinet

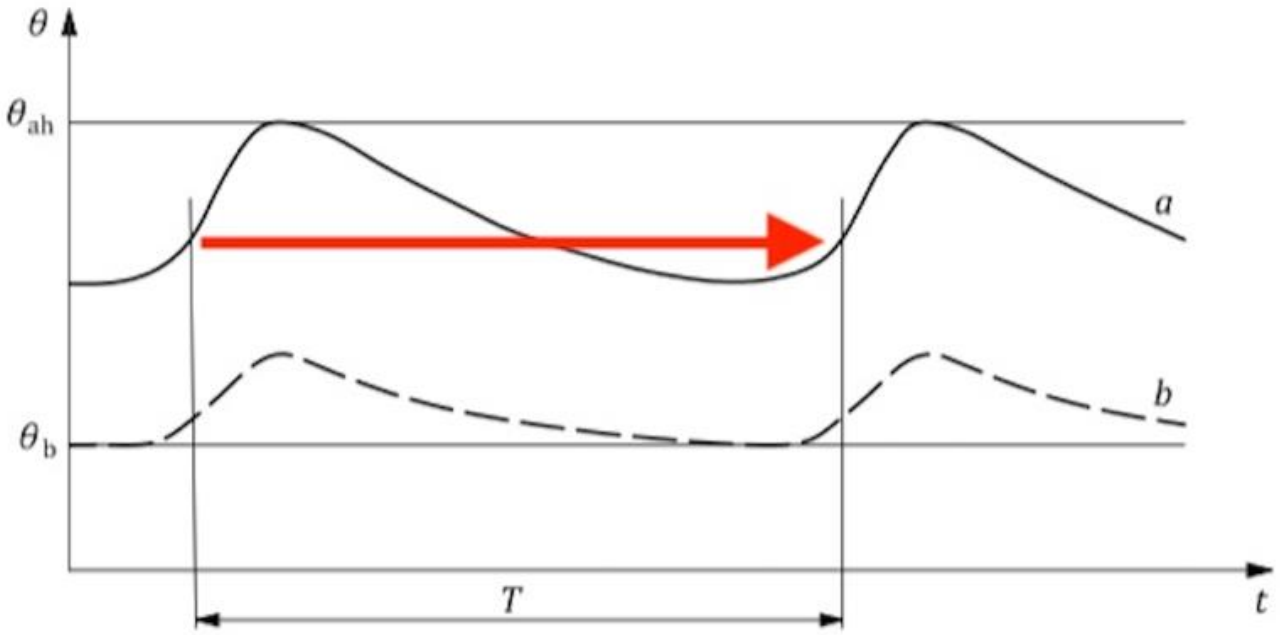
Load cabinet
- Cans, some with thermocouples

Stabilise temperatures
- 24 hours with stable temperatures

Temperature test
- 24 hours steady state test

Energy test
- 24 hours steady state test
- Lights on 12h; lights off 12h
- Impact of 'Energy Management Device' (if fitted)

“Stable conditions” reached before test starts



Key

θ temperature

- Stable conditions if, over 24 hours, each M-can has the same temperature (within +/-0.5ºC) as it did at the same point on the previous compressor cycles.
- Lights stay on throughout stabilisation.

Temperature Test

Parts of the test relevant to energy labelling:

Gross Volume
- All cooled space within the cabinet

Load cabinet
- Cans, some with thermocouples

Stabilise temperatures
- 24 hours with stable temperatures

Temperature test
- 24 hours steady state test

Energy test
- 24 hours steady state test
- Lights on 12h; lights off 12h
- Impact of 'Energy Management Device' (if fitted)

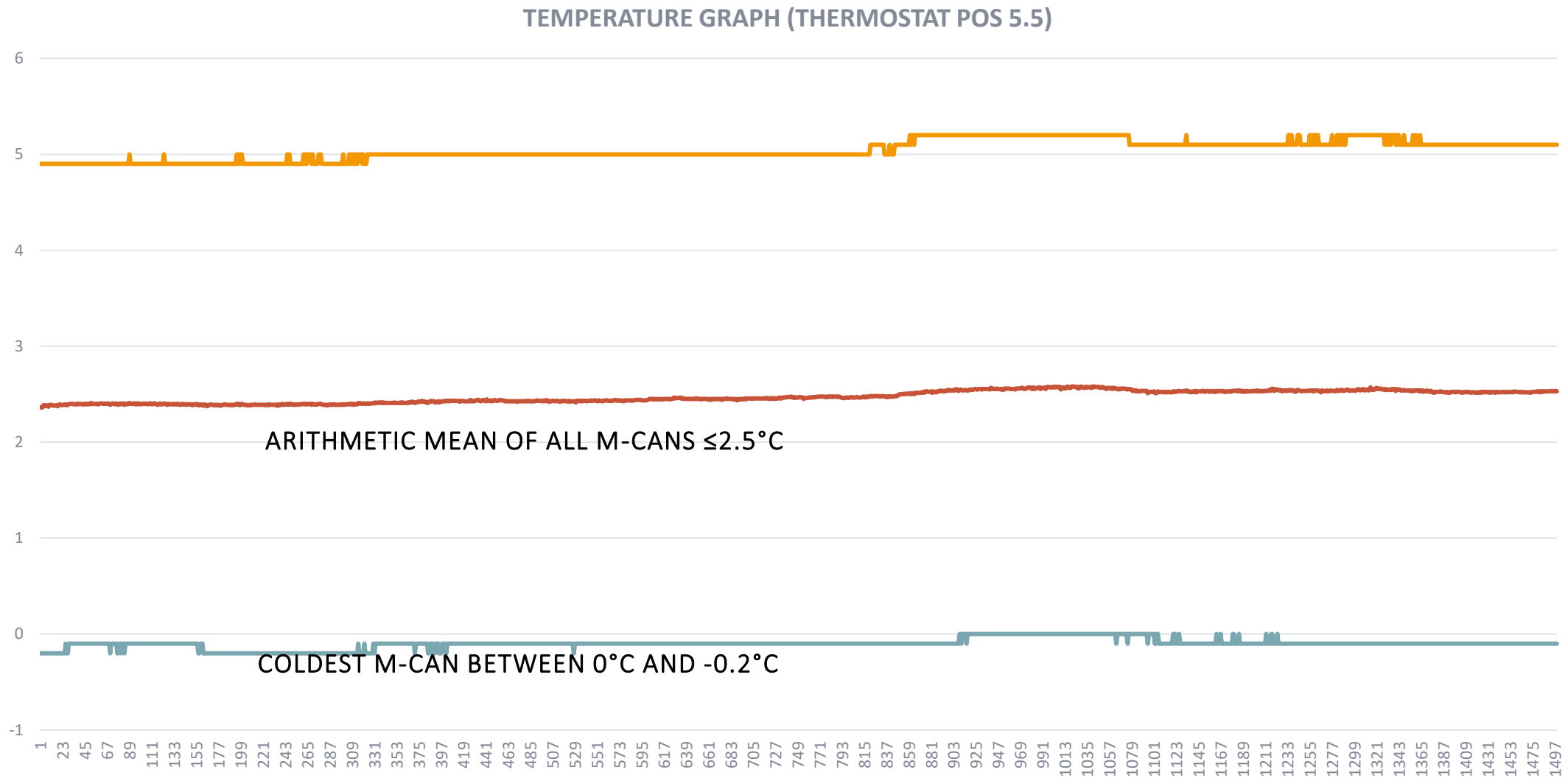
Temperature Test

After 24Hour Stable conditions

Temperature Test

- Max temp of M-can: 7°C
- Min temp of M-can: 0°C
- Duration: 24 hour
- Tolerance: 0.5°C

Temperature Test Summary



Energy Test

Parts of the test relevant to energy labelling:

Gross Volume
- All cooled space within the cabinet

Load cabinet
- Cans, some with thermocouples

Stabilise temperatures
- 24 hours with stable temperatures

Temperature test
- 24 hours steady state test

Energy test
- 24 hours steady state test
- Lights on 12h; lights off 12h
- Impact of 'Energy Management Device' (if fitted)

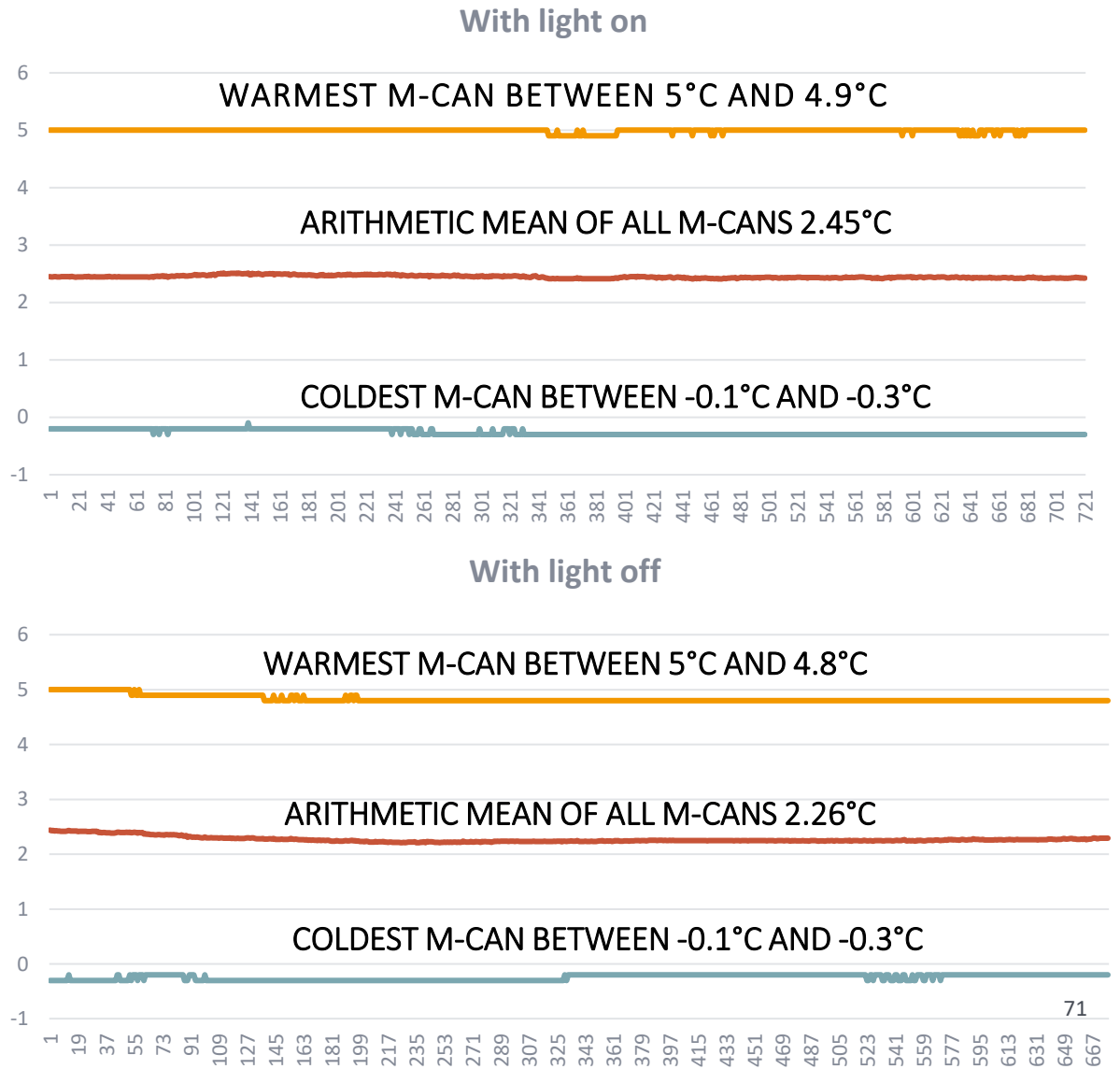
Energy Test

Energy test

Energy test is similar to temperature test but there are specific requirements for lighting and the use of EMD during the energy test. For example, for lighting 12 hours on, 12 hours off – check the standard

Energy Consumption

Energy test (Thermostat position 5.5)	
Lights on	
Average power in 12h (W)	257.8
Energy consumption (kWh/12h)	3.09
Mean temperature of M cans (°C)	2.45
Lights off	
Average power in 12h (W)	238
Energy consumption (kWh/12h)	2.85
Mean temperature of M cans (°C)	2.26
Total energy consumption (kWh/24h)	5.95



Results

Using the test results to calculate the EEI

$$EEI = \frac{TEC}{RTEC} \times 100$$

Where:

TEC is the measured Total Energy Consumption over (24 hours) derived in accordance with ISO 22044 at rating conditions of Climate Class CC2 and M-can temperature K1.

RTEC is the Reference Total Energy Consumption (over 24 hours) of a beverage cooler of the same volume, expressed in kWh per year, and is calculated using the formula below[1]:

$$RTEC = 2.1 + (0.0067725 \times Vg)$$

where

Vg is the measured **gross** volume derived in accordance with ISO 22044.

- The measured 24 hour energy consumption from the test is the TEC, used in the formula to calculate the EEI from the regulation.
- The measured gross volume is the Vg, used to calculate the RTEC from the regulation.

Using the test results to calculate the EEI

	Example 1
Gross Volume (L)	400
TEC **= 24hr Energy Consumption (kWh)**	6.00
$$RTEC = 2.1 + (0.0067725 \times Vg)$$	= 2.1 + (0.0067725*400) = 4.809
EEI $$= \frac{TEC}{RTEC} \times 100$$	= (6.0/4.809) x 100 =124
Star Level	Worse than 1* = Barred from Market

Using the test results to calculate the EEI

	Example 1	Example 2
Gross Volume (L)	400	400
TEC **= 24hr Energy Consumption (kWh)**	6.00	3.80
$RTEC = 2.1 + (0.0067725 \times Vg)$	= 2.1 + (0.0067725*400) = 4.809	= 2.1 + (0.0067725*400) = 4.809
EEI $= \frac{TEC}{RTEC} \times 100$	= (6.0/4.809) x 100 =124	= (3.80/4.809) x 100 =79
Star Level	Worse than 1* = Barred from Market	2*

Thank you

Questions?