Training Webinar

Model Regulation Guidelines for Commercial Refrigeration

Unfreezing the Savings Potential of Commercial Refrigeration Equipment

20 July 2023, 14:00 - 15:30 UTC

U4E United for Efficiency — UN environment programme

BERKELEY LAB

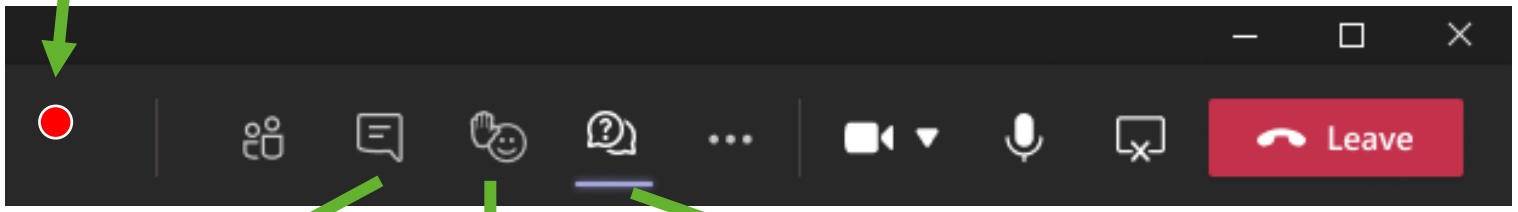
gef

Department for Environment Food & Rural Affairs

Clean Cooling COLLABORATIVE

HOUSEKEEPING

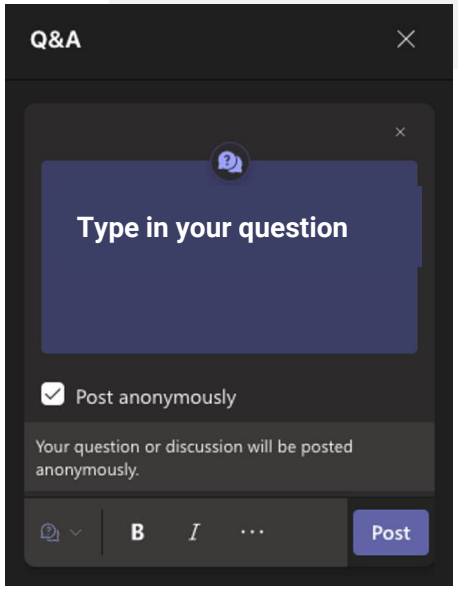
The webinar will be **recorded.** By participating you are giving your consent to this.



Write your comments and questions in the group chat on the top of your screen.

Use the “Raise Hand” button in case you would like to make a comment. We can enable your microphone and camera to allow you to do so.

Please use the Q&A option at the top of your screen to add your questions throughout the webinar.



SPEAKERS

Issy McFarlane, UK DEFRA

Brian Holuj, UNEP U4E

Dr. Alexandra Maciel, Ministry of Mines and Energy, Brazil

Dr. Nihar Shah, LBNL

Isaac Saez Alfaro, UNIDO Chile

Dr Tao Wang, Clean Cooling Collaborative

AGENDA

Welcome, housekeeping and speaker introductions	Marco Duran, UNEP U4E	14:00 –14:05
Opening: Improving energy efficiency and promoting refrigerant transition	Issy McFarlane, UK DEFRA	14:05 – 14:10
U4E Guidelines role, approach, and progress	Brian Holuj, UNEP U4E	14:10 – 14:15
Commercial Refrigeration Equipment (CRE) Guidelines content and analysis	Dr. Nihar Shah, LBNL	14:15 – 14:35
Brazil's perspective on setting MEPS for CRE and leveraging the U4E Guidelines.	Dr. Alexandra Maciel, Min. of Mines and Energy, Brazil	14:35 – 14:50
Chile's ongoing process on setting MEPS for CRE and leveraging the U4E Guidelines.	Isaac Saez Alfaro, National Consultant Chile, UNIDO	14:50-15:00
Interactive Q&A (responses to written questions submitted via chat)	Moderated by: Marco Duran, UNEP U4E	15:00 – 15:25
Closing reflections on next steps for the Guidelines	Dr. Tao Wang, Clean Cooling Collaborative	15:25 – 15:30

Department for Environment Food & Rural Affairs

Opening: Improving Energy Efficiency and Promoting Refrigerant Transition

14:05-14:10 UTC

Issy McFarlane, UK DEFRA

U4E United for Efficiency

U4E Guidelines Role, Approach, and Progress

14:10-14:15 UTC

Brian Holuj, UNEP United for Efficiency

Saving Opportunities from Energy-efficient and Climate-friendly Commercial Refrigeration Equipment

THE BEST AVAILABLE COMMERCIAL REFRIGERATION EQUIPMENT USE

80% LESS ELECTRICITY

THAN COMPARABLE EQUIPMENT USING OUTDATED TECHNOLOGY

ELECTRICITY CONSUMPTION FOR COMMERCIAL REFRIGERATION COULD INCREASE BY

NEARLY 40% BY 2040

AS DEMAND FOR THIS EQUIPMENT EXPANDS

MODEST POLICIES CAN REDUCE THIS INCREASE TO AS LITTLE AS 13%; MORE STRINGENT POLICIES COULD DECREASE ELECTRICITY CONSUMPTION TO BELOW CURRENT LEVELS

ANNUAL ELECTRICITY SAVINGS

for commercial refrigeration could reach over

66 TWh in 2040

AVOIDING THE CONSTRUCTION OF

30 LARGE POWER PLANTS

REDUCING CO_2 EMISSIONS BY **64 MILLION TONNES ANNUALLY**

SAVING CONSUMERS **$9.5 BILLION** ON THEIR ELECTRICITY BILLS

THESE SAVINGS ARE NEARLY EQUIVALENT TO THE CURRENT CONSUMPTION OF **IRAQ**

U4E United for Efficiency

U4E Model Regulation Guidelines

Objective

Guidance to help **inform regulatory authorities and policy makers**

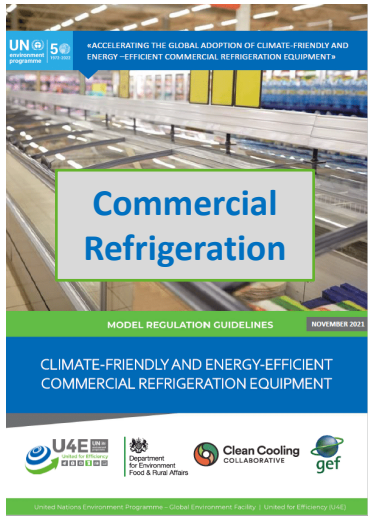
Sets a **minimum efficiency floor** to prohibit future sales of inefficient products from the market and sets higher **tiers** consistent with technology and market opportunities.

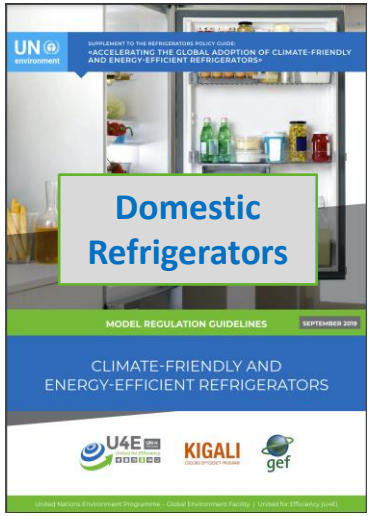
Over **60+ technical experts** (per product group) from around the world contributed data, analysis, expert reviews

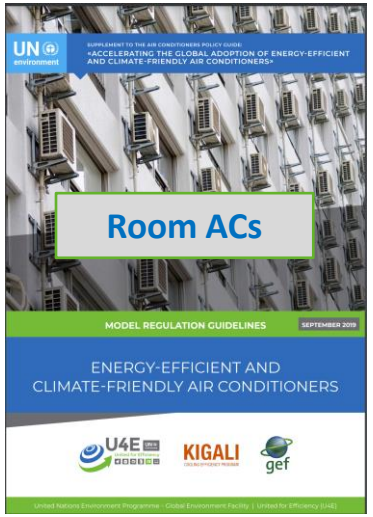
Robust **refrigerant GWP ceiling** for viable, fast action on the Kigali Amendment

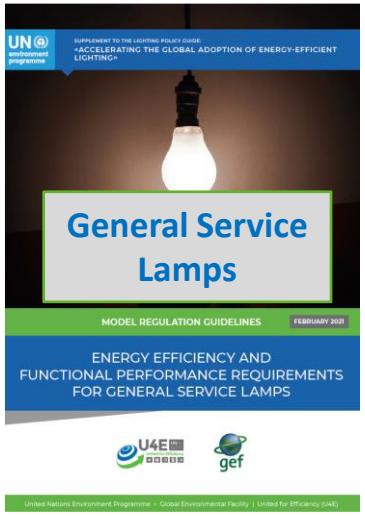
Dual focus on **efficiency** and **refrigerants** and widespread deployment

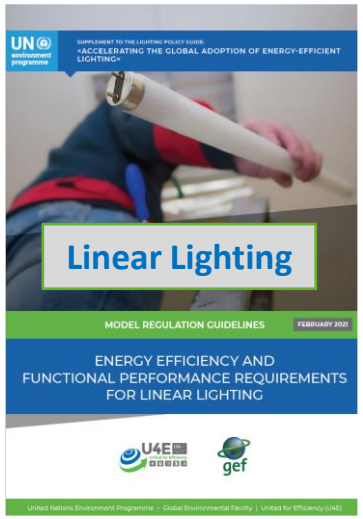
References **global technology and policy** trends

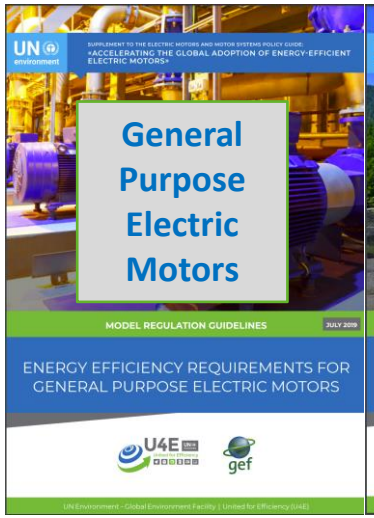


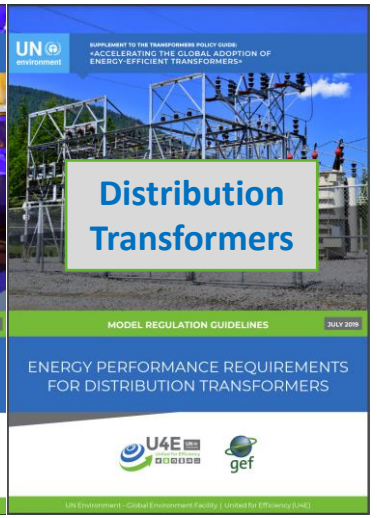








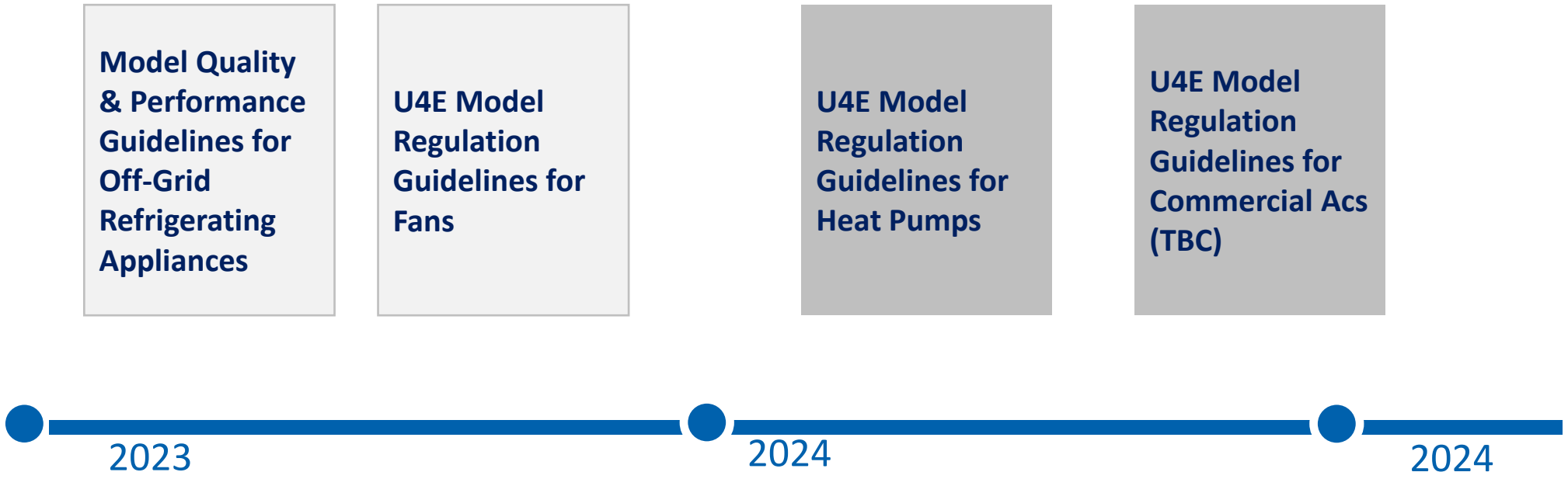




Various translations: English (all), Arabic, Spanish, Chinese, French, Portuguese

Available at: https://united4efficiency.org/resources/model-regulation-guidelines/

U4E Model Regulation Guidelines



Way forward

Expanding the portfolios of MRG appliances to **heat pumps, fans, water heaters, commercial air conditioners** (and/or update or expand existing Model Regulation guidelines) **in 2024 and beyond.**

Roles and Responsibilities

UNEP

- Champion the development and promotion of the model regulation
- Convene U4E partners and other experts to gather data and insights
- Final arbiter on content and methodology, informed by the collective input

LBNL

- Selected to review best practices, develop methodology, conduct analysis, draft text
- Refine the content based on input received at regular junctures

U4E Partners and Affiliates

- Provide data and insights for consideration in the model regulation
- If desired, endorse the model regulation and help promote its use

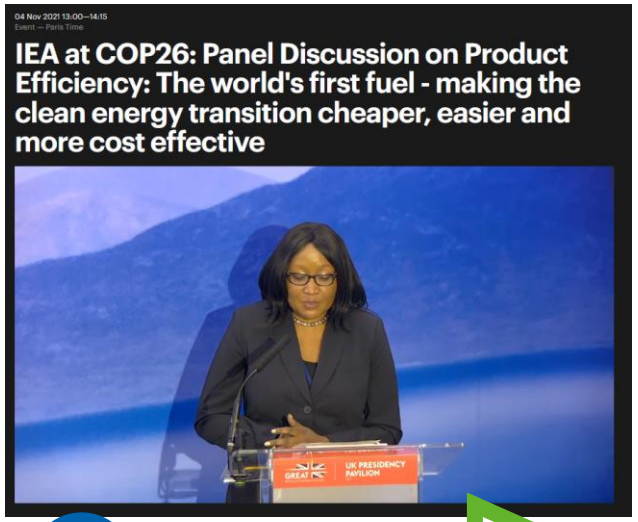
Additional Experts
(country officials, other environmental / energy efficiency organisations)

- Provide feedback on the model regulation once the initial draft is ready
- If desired, adopt the model regulation and encourage others to do so

Development Process

Initial outreach underway to secure first participants

Model Regulation Guidelines and Supporting Info Document *drafted* (May) & reviewed by experts (June)



Dec 2020

Feb 2021

Summary **background information** gathered at **inception meeting** (virtual)

May-Jun 2021

July-Sep 2021

Updated & sent (Aug. 19) & reviewed by more experts (begin Sep). Country Savings Assessments work getting underway

Oct 2021 and beyond

Launch on November 4th at COP 26 and subsequent promotion and **capacity building** via webinars, high profile events (MOP33,UNSG HLD on Energy), workshops

Commercial Refrigeration Equipment (CRE) Guidelines Content and Analysis

14:15-14:35 UTC

Nihar Shah, Global Cooling Efficiency Program
Lawrence Berkeley National Laboratory (LBNL)

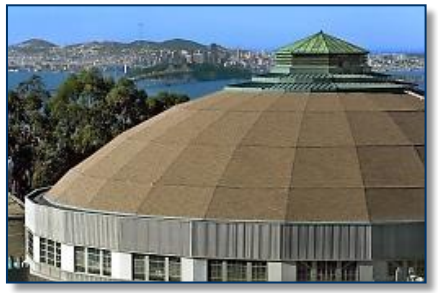
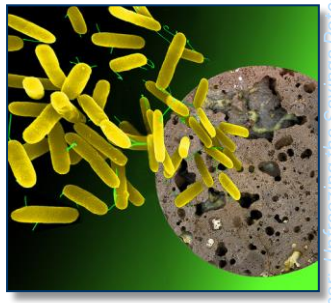
Lawrence Berkeley National Laboratory

Managed by the University of California for the United States Department of Energy

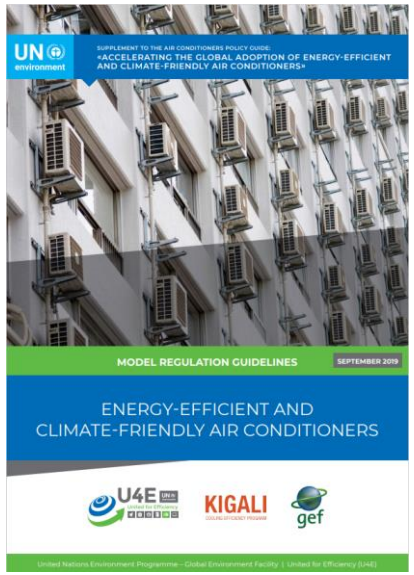
Lawrence Berkeley National Laboratory

- Dedicated to solving the most pressing scientific problems facing humanity.
- More than three decades of work internationally on clean energy and climate policy, appliances, buildings, transport, industry, air quality with significant focus on energy efficiency.
- Technical support for Kigali Amendment negotiations.
- Technical support for market transformation programs on efficient air conditioners and refrigerators in various countries including China, India, Brazil, Mexico, Egypt, Indonesia, Rwanda, and United for Efficiency (U4E) “Model Regulation Guidelines”.

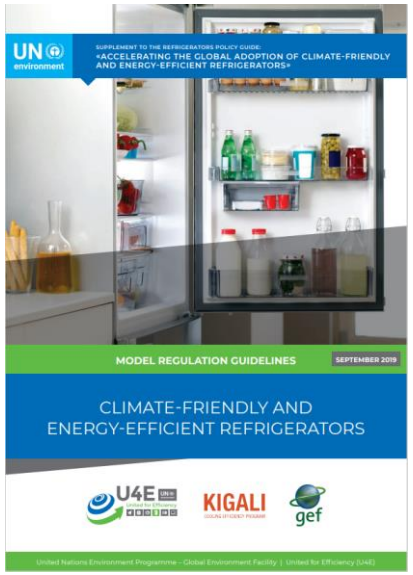


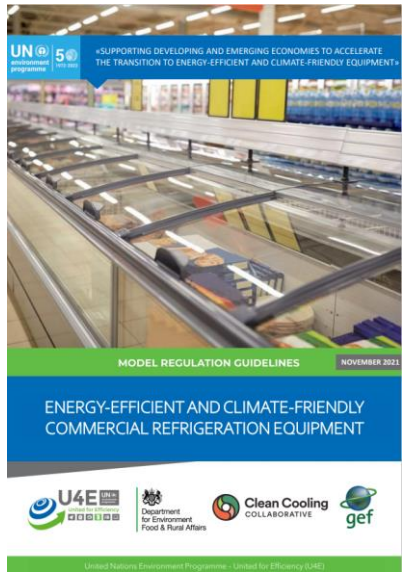
U4E Model Regulation Guidelines for Cooling Equipment



Room Air Conditioners (2019)



Refrigerating Appliances (2019)



Commercial Refrigeration Equipment (2021)

Simplify **adoption and implementation of a robust regulation**

- Target **energy-efficiency + lower-GWP refrigerants** simultaneously
- Encourage higher performing products through **labelling**
- Vary requirements to capture **climatic differences**
- Use proven **best practices** and tap into global policy and technology trends

- Intended as guidance to help **inform regulatory authorities and policy makers**
- Sets a **minimum efficiency floor** to prohibit future sales of inefficient products from the market.

U4E Model Regulation Guidelines for Cooling Equipment

- U4E Guidelines reference global technology and policy trends.

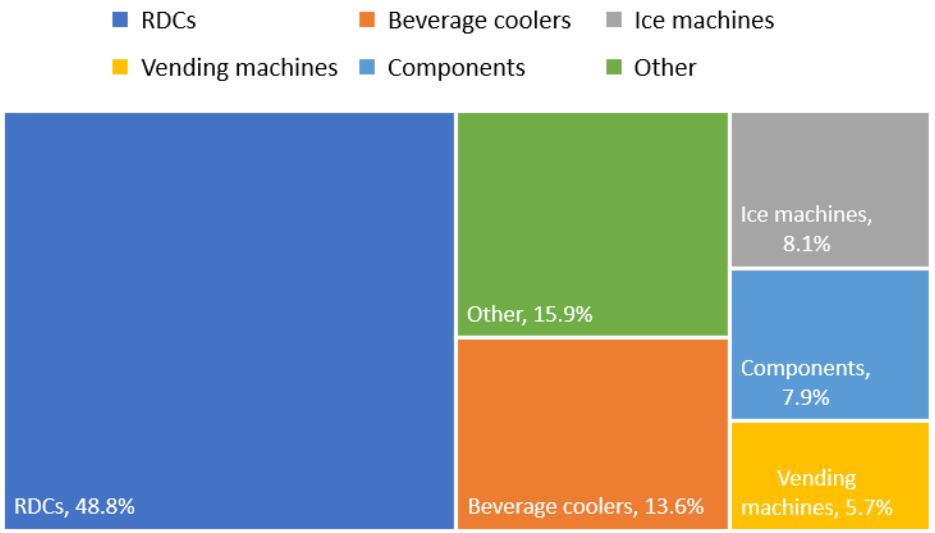
	Air Conditioners	Refrigerating Appliances	Commercial Refrigeration Equipment
Scope and product categories	• Air Conditioners, Heat Pumps • Ductless split, Self-contained, Portable types	• Refrigerators • Refrigerator-Freezers • Freezers	• Refrigerated Display Cabinets (Beverage coolers, Ice cream freezers) • Refrigerated Storage Cabinets • Refrigerated Vending Machines
MEPS & labelling requirements	• Largely aligned with international best practices (China 2020)	• Largely aligned with international best practices (EU 2021/2024, India, Mexico, the U.S.)	• Largely aligned with international best practices (AU 2021, EU 2021, China, and the U.S.)
Test methods	• ISO 5151:2017 • ISO 16358-1, -2, -3: 2013 • ISO 16358-1: 2013/Amd 1: 2019	• IEC 62552:2015	• ISO 23953: 2015 • ISO 22041: 2019 • ISO 22043: 2020 • ISO 22044:2021 • IEC 63252: 2020 • EN 16838: 2016
Efficiency metrics	• CSPF for cooling-only units • APF for reversible heat pumps	• R = RAEC / AEC • 24°C (plus 20°C and 32°C)	• EEI = AEC / RAEC • 25°C or 30°C
Refrigerant requirements	• GWP 750 or less (split) • GWP 150 or less (self contained) • ODP 0	• GWP 20 or less • ODP 0	• GWP 150 or less • ODP 0

Global Commercial Refrigeration Equipment (CRE) Market

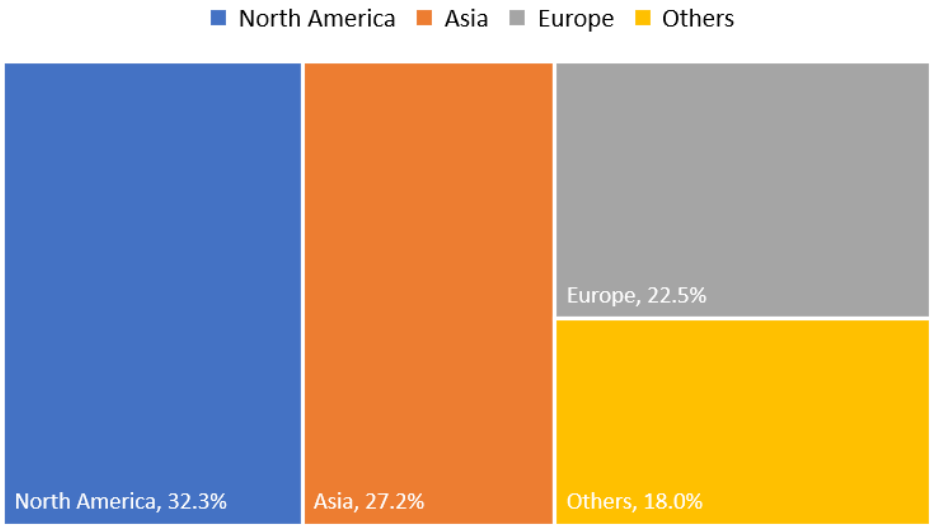
- **Commercial Refrigeration Equipment (CRE)** refers generally to non-domestic (non-household) refrigeration equipment used in retail and food service sectors for storage or display of foodstuffs.
  - **Refrigerated display cabinets (RDCs)** are estimated to account for the half of the global commercial refrigeration equipment market.
  - North America is the largest market in the world with a market value of US$ 14 B, followed by Asia (where China and India are leading the growth) and Europe.

Global CRE Market = US$ 43.3 (in 2020)

CRE market share 'by type'



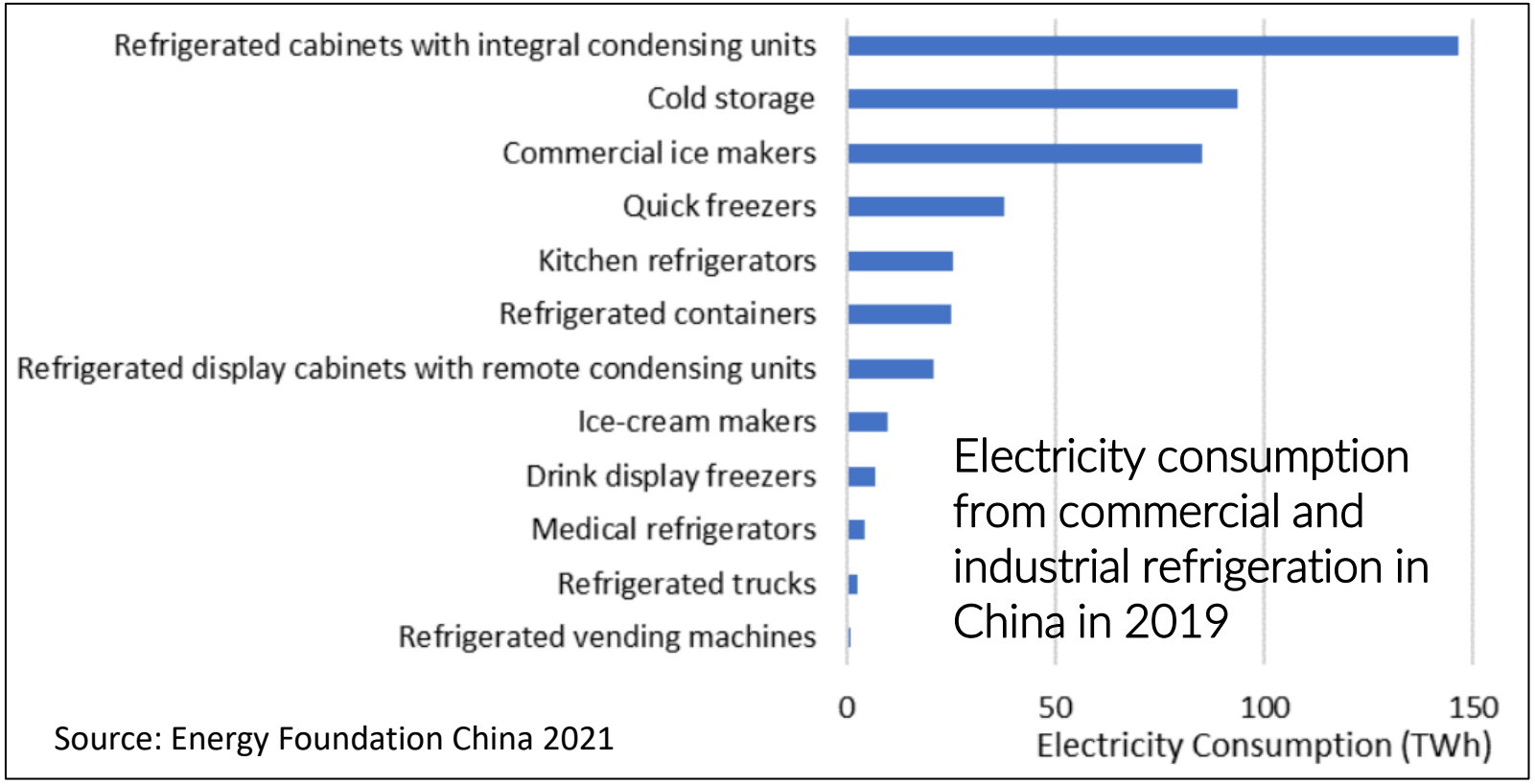
CRE market 'by region'



Source: Japan Air Conditioning, Heating & Refrigeration News (JARN) (2021)

CRE Energy Consumption

- In China, of 29 selected cooling products analyzed, **commercial refrigerated cabinets with integral condensing units** were estimated to account for about 11% of the total cooling energy consumption in 2019.
- **Refrigerated cabinets with integral condensing units** were also identified to have the third-largest energy savings potential among key cooling products, after room air conditioners and variable refrigerant flow systems.



Electricity consumption from commercial and industrial refrigeration in China in 2019

Source: Energy Foundation China 2021

CRE Products

- U4E Guidelines cover refrigerated display cabinets (RDCs), refrigerated storage cabinets (RSCs), and refrigerated vending machines (RVMs) that are generally regulated in leading economies.

Purpose	Condensing Unit	Configuration	Temperature	Reference Standard*
Display	Remote	Horizontal	Chilled	• ISO 23953: 2015 (refrigerated display cabinets) • ISO 22044: 2021 (Beverage coolers) • ISO 22043: 2020 (ice-cream freezers) • EN 16838: 2016 (refrigerated display scooping cabinets for gelato)
			Frozen	
		Vertical	Chilled	
			Frozen	
	Integral	Horizontal	Chilled	
			Frozen	
		Vertical	Chilled	
			Frozen	
Storage	Integral	Horizontal	Chilled	• ISO 22041: 2019
			Frozen	
		Vertical	Chilled	
			Frozen	
Refrigerated Vending Machines				• IEC 63252: 2020

Integral vertical chillers

Beverage cooler

Scooping cabinet

Ice cream freezer

Integral horizontal chillers/ freezers

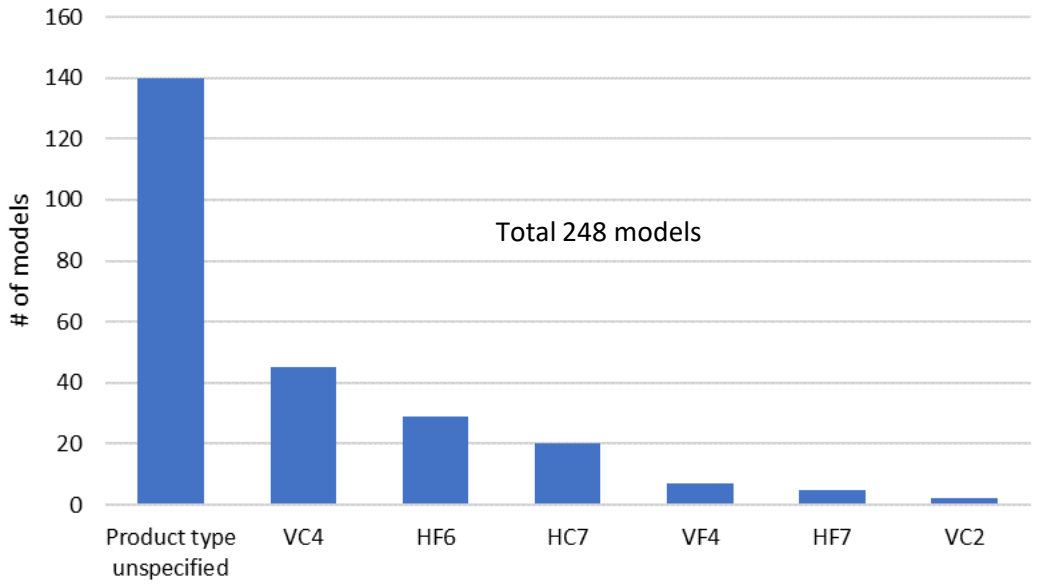
Remote vertical chiller

Integral vertical storage chiller

CRE Products in Chile

Purpose	Condensing Unit	Configuration	Temperature	ISO 23953 Product Type
	Remote	Horizontal	Chilled	RHC1 - RHC8
			Frozen	RHF1, RHF3 - RHF7
		Vertical	Chilled	RVC1 – RVC4, RYC1 – RYC4
			Frozen	RVF1 – RVF4, RYF1 – RYF4
Display	Integral	Horizontal	Chilled	IHC1, IHC2, IHC3, IHC4, IHC5, IHC6, **IHC7**, IHC8
			Frozen	IHF1, IHF3, IHF4, IHF5, **IHF6, IHF7**
		Vertical	Chilled	IVC1, **IVC2**, IVC3, **IVC4** IYC1, IYC2, IYC3, IYC4
			Frozen	IVF1, IVF2, **IVF4** IYF1, IYF1, IYF4
Storage	Integral	Horizontal	Chilled	Covered by ISO 22041: 2019
			Frozen	
		Vertical	Chilled	
			Frozen	
Refrigerated Vending Machines				Covered by IEC 63252: 2020

- **In Chile, there exists a database of integral RDCs, but information on product type is not fully available. Regardless, vertical chillers (VC), e.g., beverage coolers, and horizontal chillers/freezers appear to be popular.**



Source: Cota Consultoría Spa

An Approach to MEPS Development for CRE Products in Chile

- The first priority for MEPS development in Chile CRE is on **refrigerated display cabinets (RDCs) with integral condensing units, including beverage coolers and ice-cream freezers**, given that an energy efficiency certification program has been implemented with UNE-EN ISO 23953-2:2013.
- Other product types such as RSCs, RDCs with remote condensing units, RVMs can be considered in the following steps, based on an updated market assessment for those products and the experience from RDCs with integral condensing units.

Test Conditions, Energy Efficiency Metrics and Requirements

- Compliance with the energy consumption requirements are recommended to be tested according to the conditions aligned with the U4E Guidelines and reference standards.

Equipment Class	AEC (kWh/yr)	RAEC (kWh/yr)	Package Temp Class	Test Room Climate Class	Reference Standard
RDC	E_{daily} x 365	(M + (N x TDA)) x 365	M0, M, M1, M2, H1, H2, L1, L2, L3	3	ISO 23953: 2015 (under revision)
RDC-BC	E_{daily} x 365	(M + (N x V_N) x 365	M2	3	ISO 22044: 2021
RDC-ICF	E_{daily} x 365	(M + (N x V_N)) x 365	C1, C2	4	ISO 22043: 2020

RDC: refrigerated display cabinet
BC: beverage cooler
ICF: ice cream freezer

TDA: total display area
Vn: net volume

Equipment category				Equipment class code	Low efficiency (high EEI)	Intermediate efficiency (intermediate EEI)	High efficiency (low EEI)
RDC	Integral	Horizontal	Chiller	RDC-IHC	130	90	50
			Freezer	RDC-IHF	130	90	50
		Vertical	Chiller	RDC-IVC	130	90	50
			Freezer	RDC-IVF	130	90	50
	Beverage Cooler (BC)		Chiller	RDC-BC	100	70	40
	Ice-cream Freezer (ICF)		Freezer	RDC-ICF	100	70	50

$$EEI = \frac{AEC}{RAEC} \times 100$$

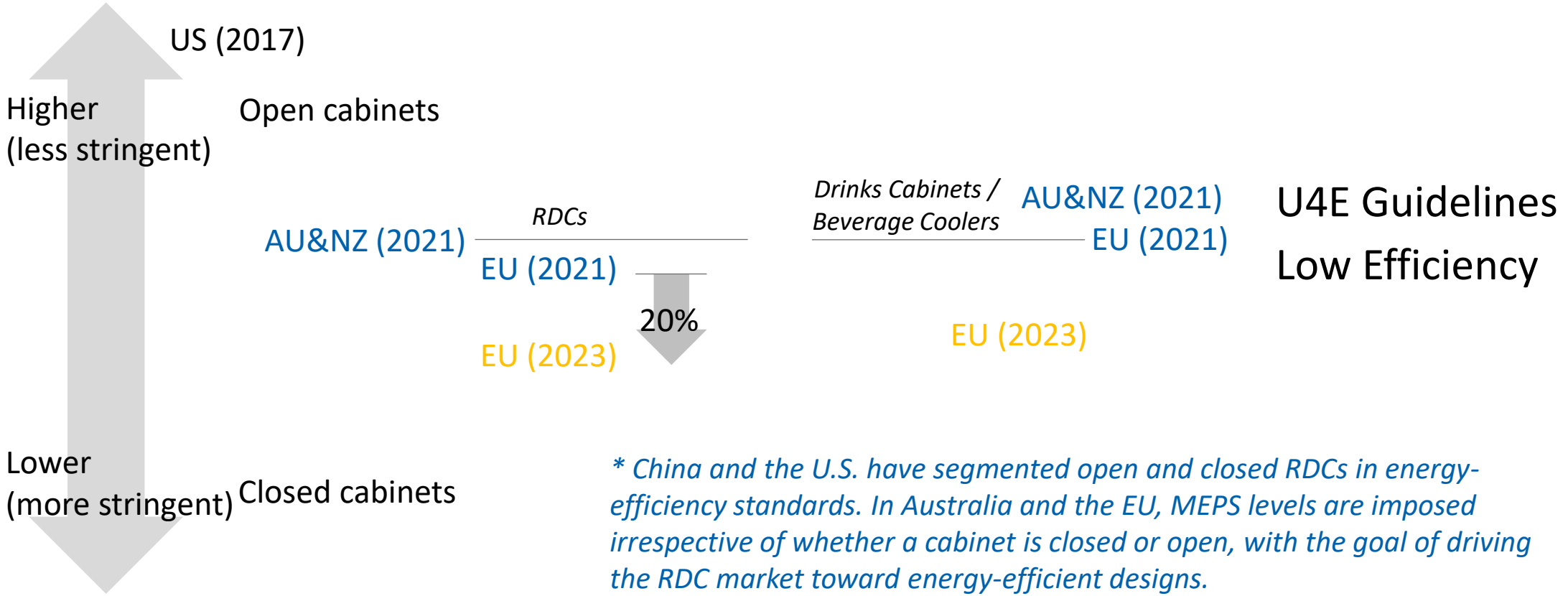
AEC is the equipment's annual energy consumption, expressed in kWh per year.
RAEC is the equipment's reference annual energy consumption, expressed in kWh per year.

Max Energy Consumption (Min Efficiency) Requirements

Approaches and EE levels in the U4E Model Regulation Guidelines are aligned with:

- AU 2021 (RDCs) and EU 2021 (RDCs) – Guidelines' low efficiency
- EU 2023 (RDCs), China 2021 draft, and US 2017 (closed cabinets) – Guidelines' intermediate or high efficiency

Comparison of MEPS for illustrative purposes only



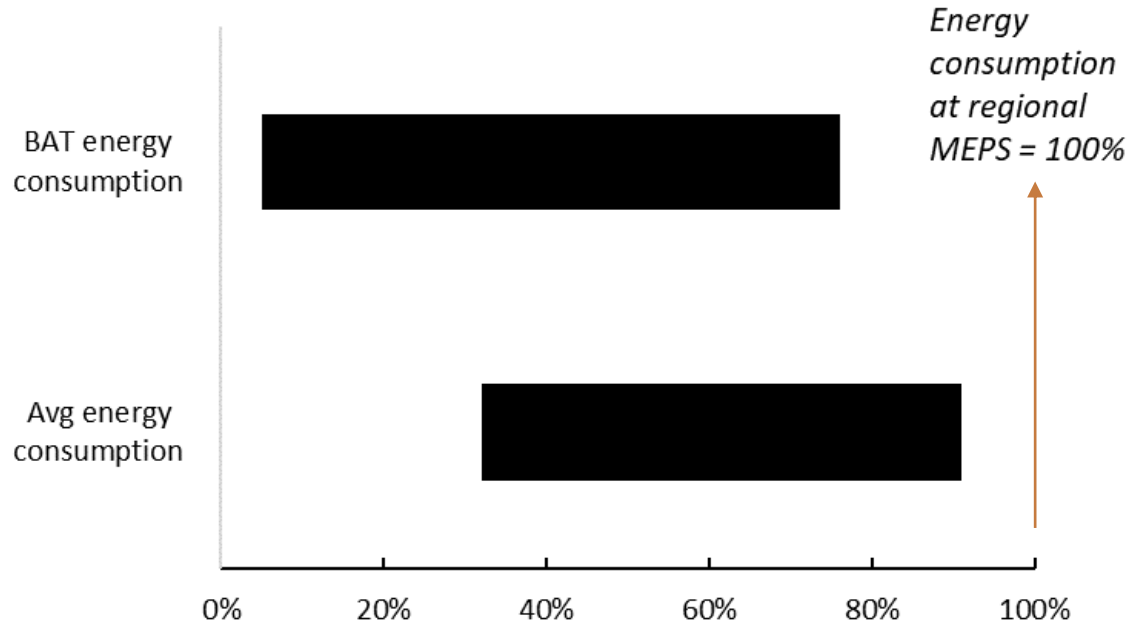
** China and the U.S. have segmented open and closed RDCs in energy-efficiency standards. In Australia and the EU, MEPS levels are imposed irrespective of whether a cabinet is closed or open, with the goal of driving the RDC market toward energy-efficient designs.*

Energy Efficient CRE Commercially Available

Based on the market data from Australia, China, EU and the US,

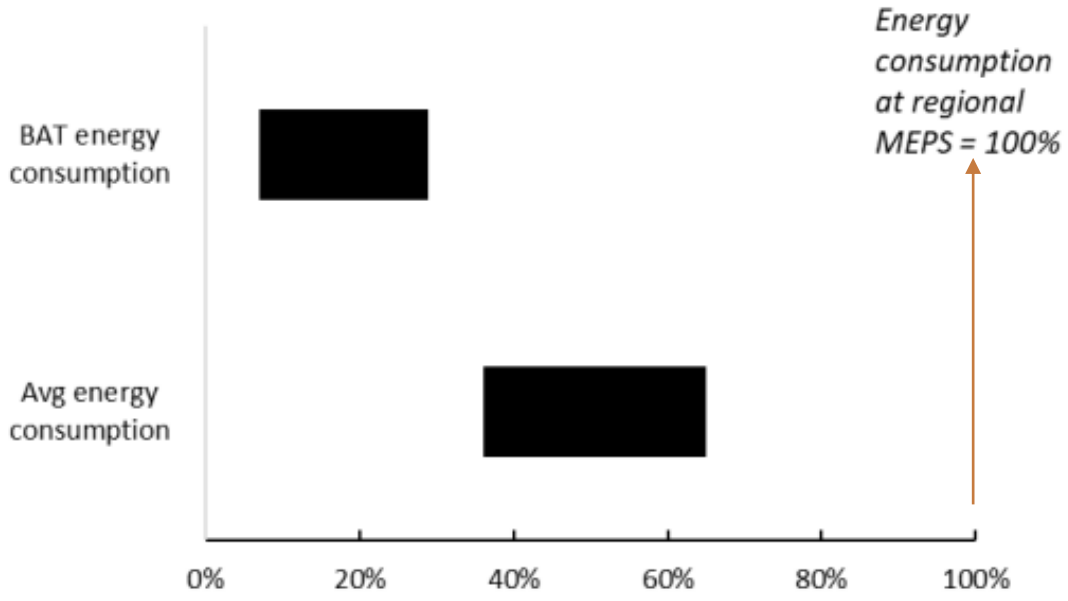
RDCs

- Average energy consumption in RDCs is assessed to be lower by **9%-68%** than each regional MEPS.
- Most efficient systems consume lower energy by **23%-95%** than each regional MEPS.



Beverage Coolers

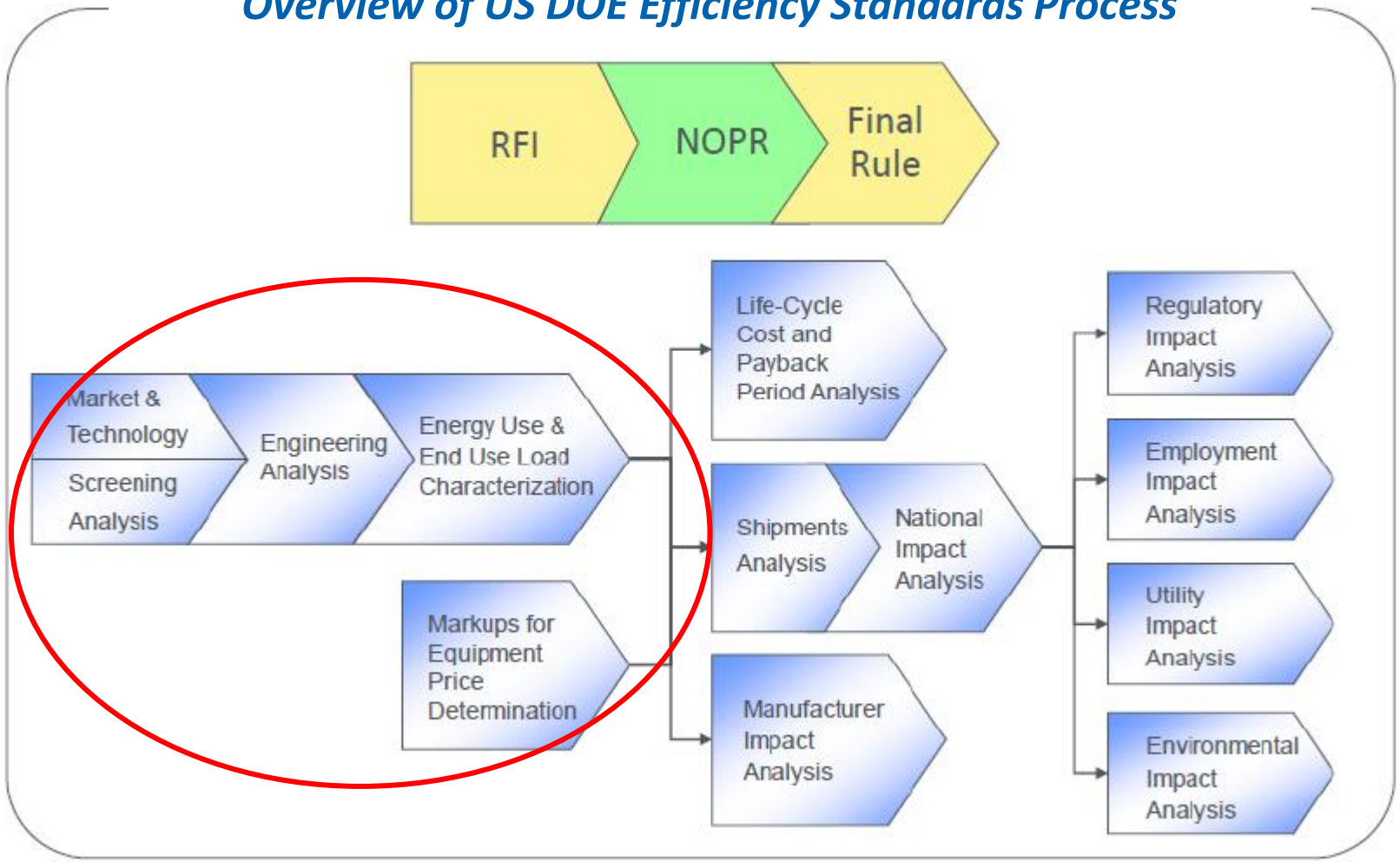
- Average energy consumption in beverage coolers is assessed to be lower by **35%-64%** than each regional MEPS.
- Most efficient systems consume lower energy by **71%-93%** than each regional MEPS.



Cost-Efficiency Analysis

- It is essential to conduct analysis for determining whether a specific energy efficiency level is technically feasible and economically justified.

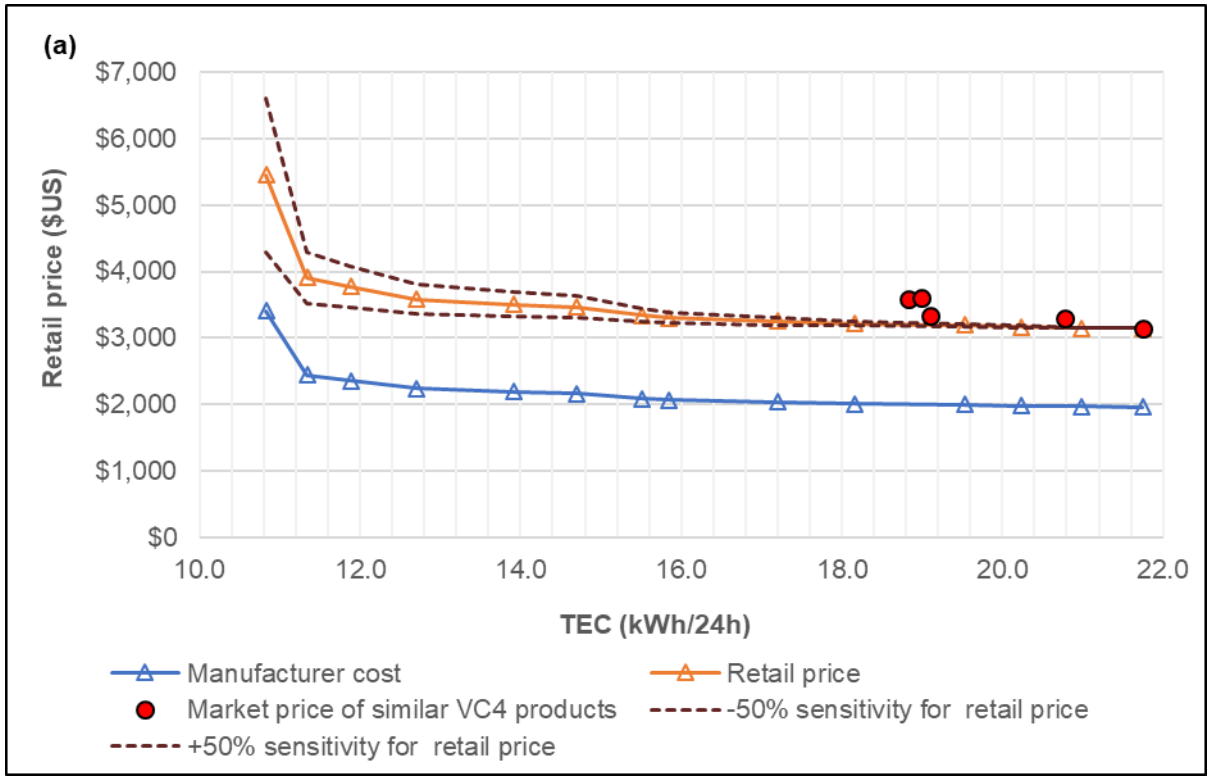
Overview of US DOE Efficiency Standards Process



Cost of Improving Efficiency Based on LBNL's Data

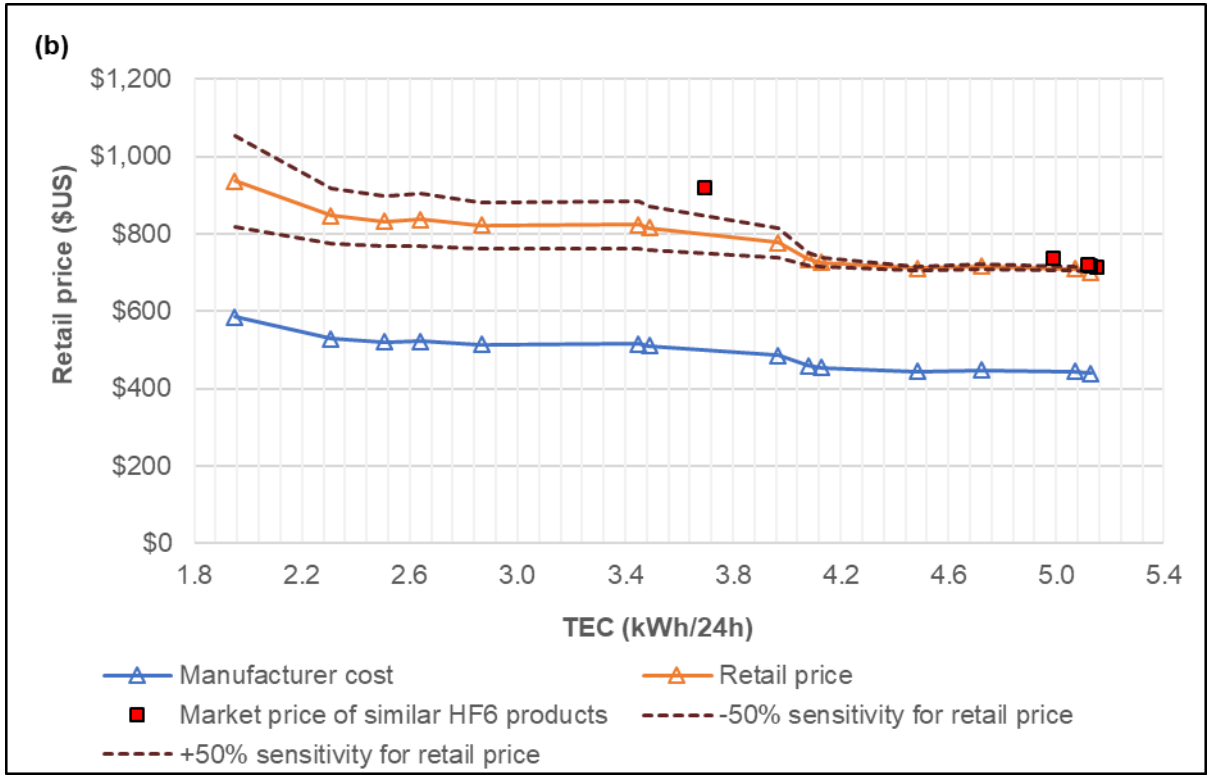
Vertical integral chiller

- Vertical integral transparent door chiller systems (VC4): Improving the baseline energy consumption of 21.74 kWh/day to 12.71 kWh/day (~42% improvement) can be achieved at a price increase of about 14%.



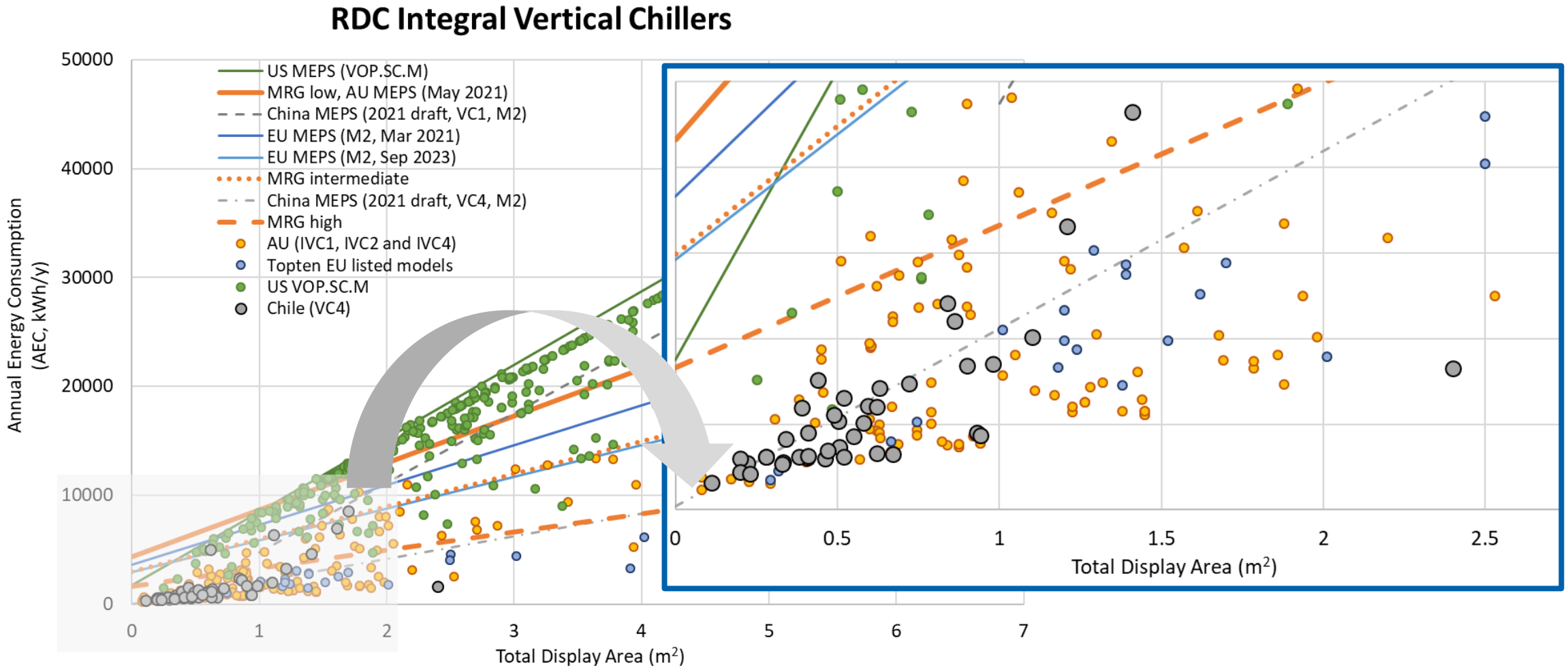
Horizontal integral freezer

- Horizontal integral transparent door freezer systems (HF6): Improving the baseline energy consumption of 5.13 kWh/day to 2.87 kWh/day (~44% improvement) can be achieved at a price increase of about 17%.



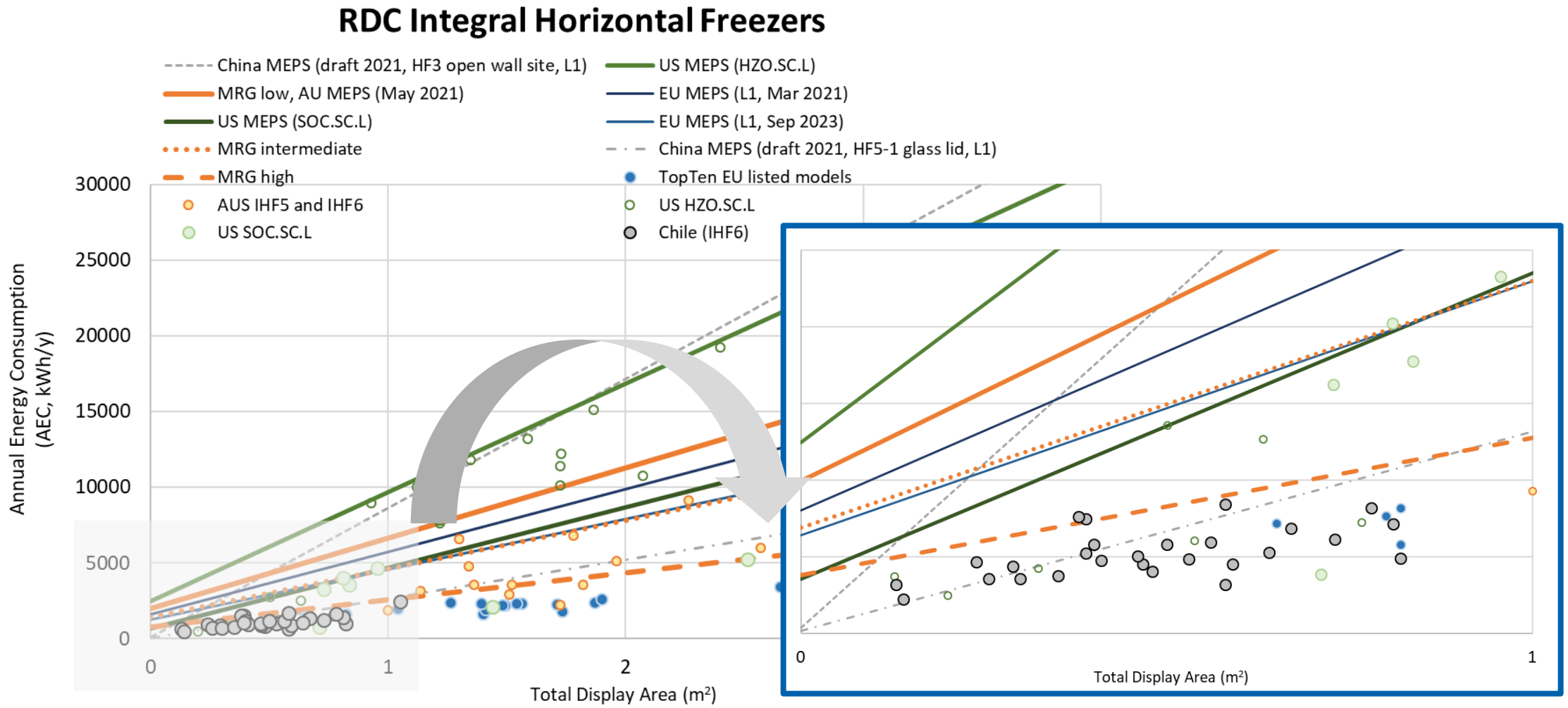
CRE Energy Consumption in Chile – Vertical Chillers

- 45 vertical chiller (VC4) models identified in Chile are relatively small sizes, and appear to achieve energy consumption lower than the Guidelines intermediate or high efficiency requirements, comparable with similar products in the Australia and EU markets.



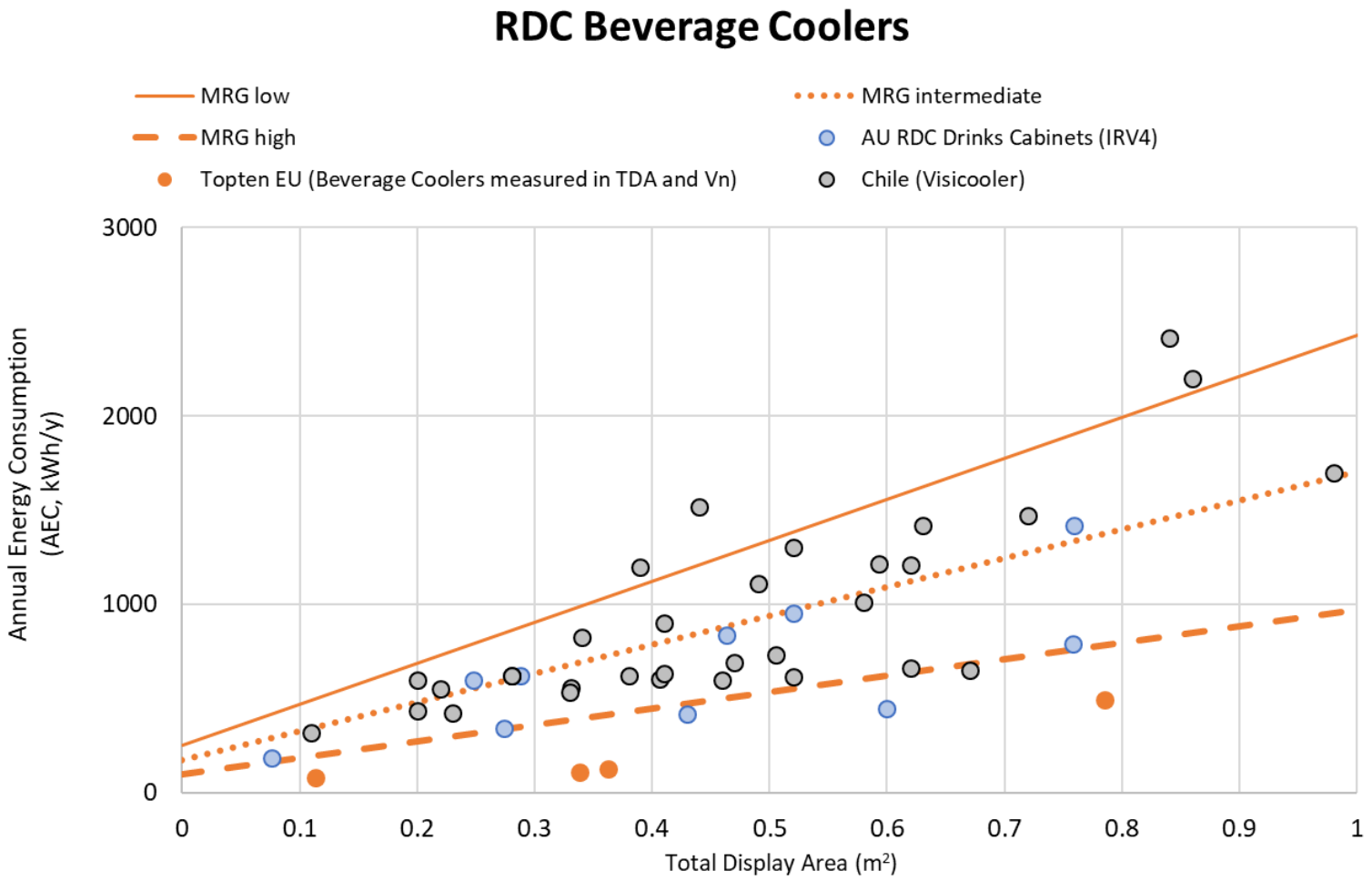
CRE Energy Consumption in Chile – Horizontal Freezers

- 28 horizontal freezer (HF6) models identified in Chile are relatively small sizes (likely closed cabinets), and appear to achieve energy consumption lower than the Guidelines intermediate or high efficiency requirements, comparable with similar products in the Australia, EU, and US markets.



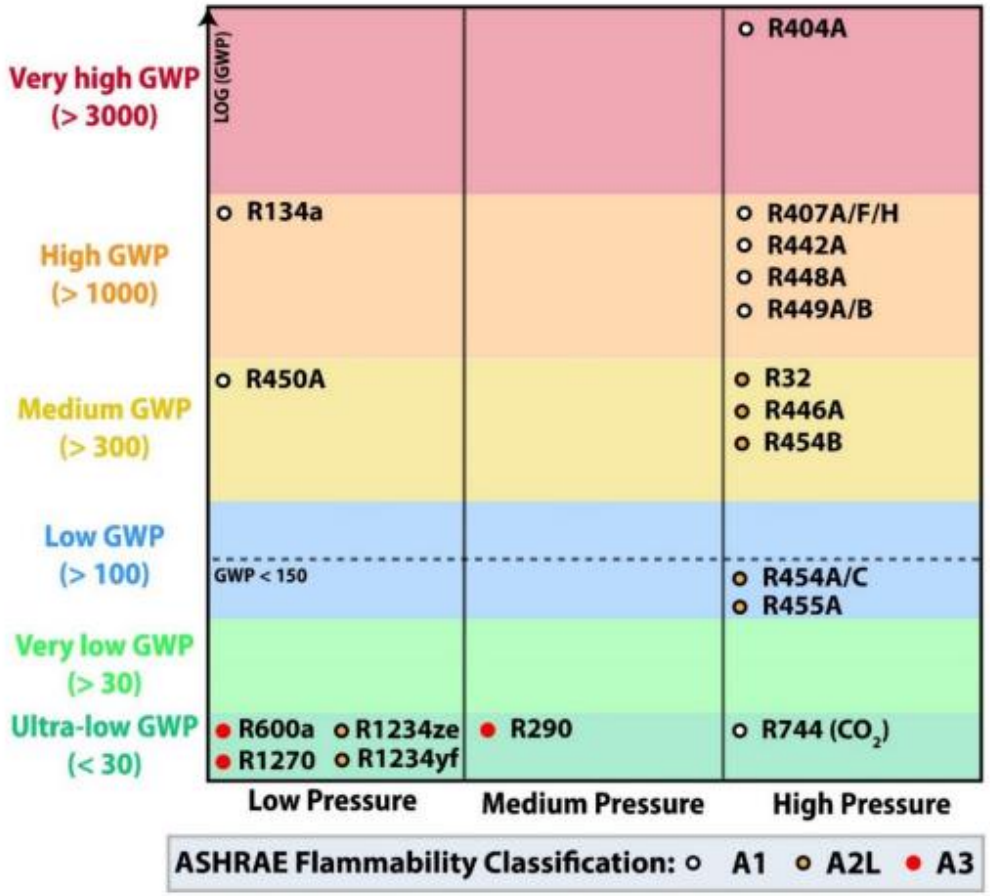
CRE Energy Consumption in Chile – Beverage Coolers

- Most of 33 beverage coolers (part of vertical chillers) identified in Chile appear to achieve energy consumption lower than the Guidelines low or intermediate efficiency requirements, comparable with similar products in the Australia market.



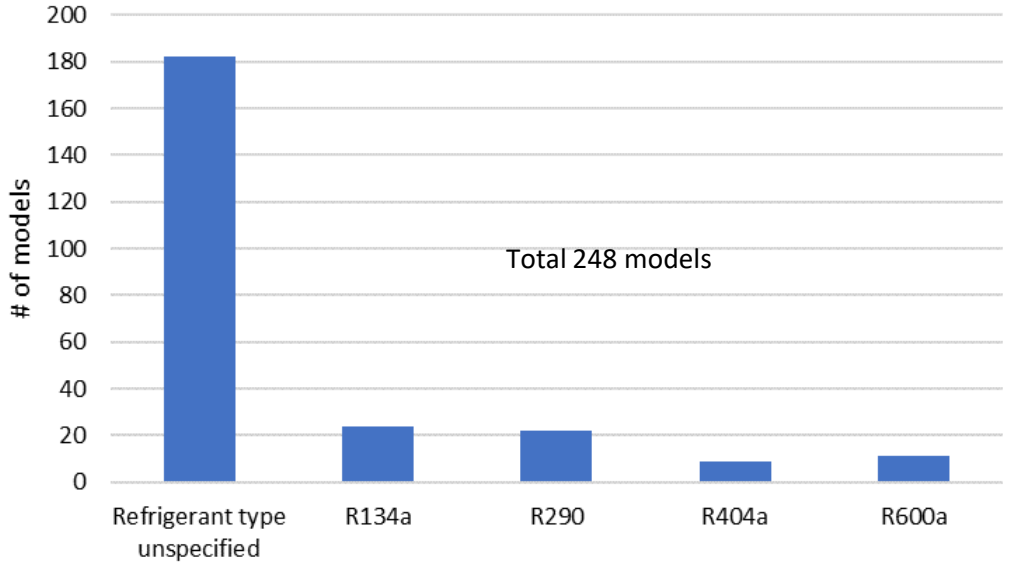
Refrigerants

Equipment class	GWP	ODP
All types	150	0



GWP values, flammability classifications, and operating pressures of the refrigerants used in commercial refrigeration and their proposed replacements

- The refrigeration industry is currently in the process of phasing-out hydrofluorocarbon (HFC)-based refrigerants due to their relatively high global warming potential (GWP).
- In Chile, although information on refrigerant type is not fully available, R290 and R600a are currently in use.



Source: Cota Consultoría Spa

Summary of Findings

- Based on an initial cost-effectiveness analysis, improving the efficiency of selected product groups is cost-effective.
- Based on available market product data from Australia, EU and the U.S., the most efficient systems consume 61%-93% less energy (varying by product type) than each regional MEPS.
- Market data for Chile is not yet fully available. However, selected RDC types appear to achieve energy consumption below U4E Guidelines requirements, on par with similar products in the Australia, EU, and U.S. markets. This is true even considering some differences in how energy consumption is measured in UNE-EN ISO 23953-2:2013 (Chile) and ISO 23953: 2015 (Australia and the EU).
- Our cost-efficiency results indicate that Chile has a great opportunity to improve its CRE system efficiency using cost-effective technologies. With stringent MEPS levels, sufficient incentives, and robust regulatory programs such as labeling and procurement programs, high-efficiency CRE systems can be developed and deployed successfully in Chile.

Initial Recommendations

1. Update the CRE product database by ensuring product and refrigerant types are specified for each registered model.
2. Consider adopting the latest version of ISO 23953 for RDCs, ISO 22043 for ice-cream freezers and ISO 22044 for beverage coolers. Adopting the latest international test standards would improve Chile's energy efficiency programs and facilitate consistency with international efforts.
3. Consider developing MEPS first for RDCs with integral condensing units, including beverage coolers and ice-cream freezers, given that an energy efficiency certification program has been implemented with UNE-EN ISO 23953-2:2013. Other product types such as RSCs, RDCs with remote condensing units, and refrigerated vending machines can be considered later, based on updated market assessments for those products and the experience gained by developing MEPS for RDCs with integral condensing units.
4. Consider MEPS for vertical chillers and horizontal freezers at the U4E "low" level. For beverage coolers, MEPS could be set at the U4E "intermediate" level based on an initial market and cost-efficiency analysis.
5. Consider adopting MEPS with low-GWP refrigerants, starting with RDCs with integral condensing units, including beverage coolers and ice-cream freezers, in alignment with the U4E Guidelines (which are largely consistent with other countries' practices).
6. Consider conducting a market assessment for other CRE products before establishing MEPS and energy-efficiency programs.

THANK YOU

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Brazil’s perspective on setting MEPS for CRE and leveraging the U4E Guidelines

14:35-14:50 UTC

Alexandra Maciel, DIEE/SNTEP/MME, Ministry of Mines and Energy, Brazil

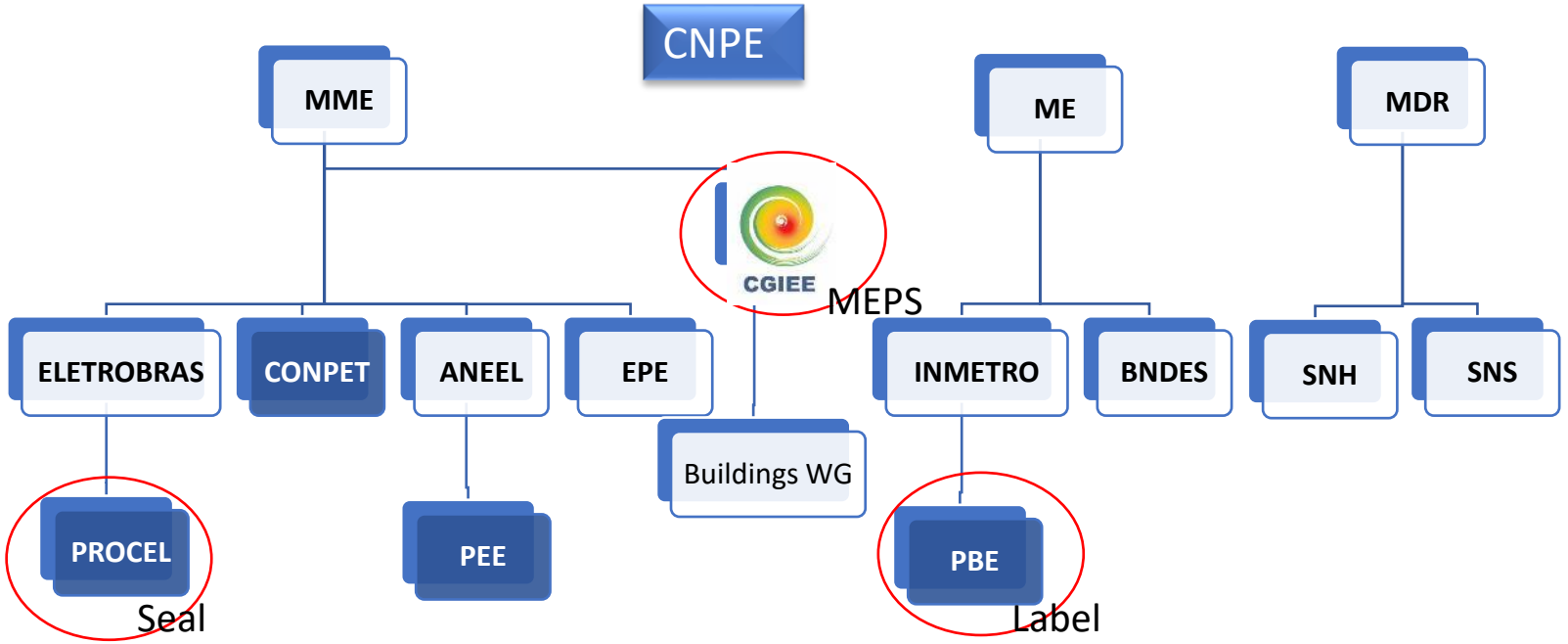
Institutional framework for energy efficiency

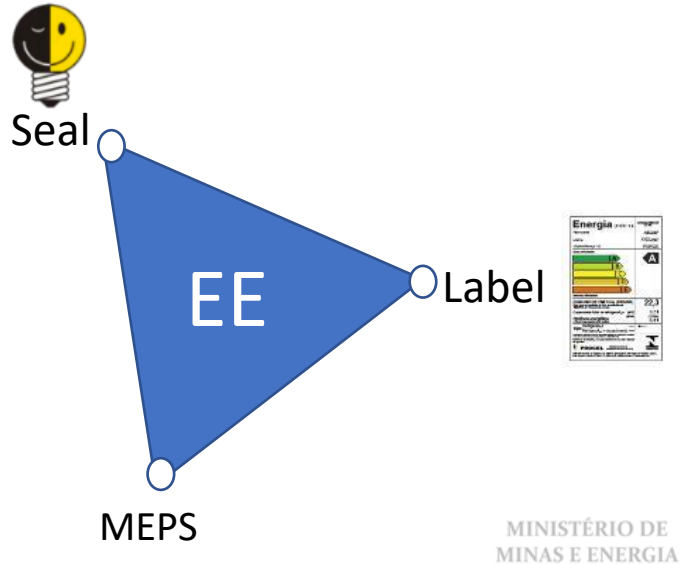
CGIEE

Since 2001

Members:

- MME-Mines and Energy (president);
- MCTI- Science and Technology;
- MGI- Management;
- ANEEL-Regulatory Agency in Electricity;
- ANP- Regulatory Agency of Oil and gas; and
- 2 experts in energy





Other ministries involved, according to the policy or sector: Education, Foreign Affairs, Regional Development, Plannings, etc.

MINISTÉRIO DE MINAS E ENERGIA
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Regulated equipment

https://www.gov.br/mme/pt-br/assuntos/ee/cgiee-1/cgiee

CGIEE

MEPS

Electric motors of threfase induction Decreto nº 4.508/2002 (Reg. Específica) – PI nº 553/2005 (Programa de Metas)
PI nº 01/2017

Fluorescent Compact light bulbs
PI n° 132/2006 (Reg. Específica)
PI nº 1008/2010 (Programa de Metas)

Freezer and refrigerator
PI n° 362/2007
PI nº 326/2011
PI nº 01/2018

Gas ovens and stoves
PI n° 363/2007
PI nº 325/2011

Air Conditioner
PI n° 364/2007
PI nº 323/2011
PI nº 02/2018
Res. no 1/2022

Gas Water Heaters
PI n° 298/2008
PI nº 324/2011

Electromagnetic reactors for Sodium and Metallic Vapour Light bulbs
PI nº 959/2010

Incandescent light bulbs
PI nº 1007/2010

Distribution Transformers
PI nº 104/2013
PI nº 03/2018

Ceiling Fans
PI nº 02/2017

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https://www.gov.br/mme/pt-br/assuntos/ee/cgiee-1/cgiee

Latest Updates:

- MEPS review for **ACs**- recently published
- Under development: MEPS review for **domestic refrigerators** and regulation proposal for **commercial refrigerators** (Cooperation with U4E- PNUMA- resources from Global Climate Fund)- https://www.gov.br/mme/pt-br/assuntos/ee/refrigeradores-comerciais-eficientes-no-brasil
- Cooperation with Clasp and Procel- development of **MEPSY tool-** supports the prioritization process (https://clasp.shinyapps.io/mepsy/)

Short Term Challenges

Studies for regulating **LED lighting bulbs**

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Commercial refrigerators

https://www.gov.br/mme/pt-br/assuntos/ee/refrigeradores-comerciais-eficientes-no-brasil

•Develop a national market assessment and a study of international best practices, to develop specific technical **recommendations for the implementation of minimum efficiency standards, labels and performance seals** for commercial refrigeration in Brazil.

•Provide capacity building and training for stakeholders.

•Build capacity for effective **market surveillance**, addressing Monitoring, Verification and Compliance (MVE) as well as testing standards.

•Develop **recommendations on Sustainable Public Procurement** to drive the purchase of more energy-efficient refrigeration products.

•Develop material to **support a communication campaign** aimed at consumers about the benefits of more efficient commercial refrigerators.

•Hold a **workshop to present neighboring countries on the new MEPS, labels and seals proposed** for commercial refrigerators in Brazil, so that they can take advantage of the content, approach and lessons learned.

- **ABINEE**
- **ABRAVA**
- **ANEEL**
- **Arneg**
- **CEPEL**
- **Eletrobrás**
- **Eletrofrio**
- **EPE**
- **Esmaltec**
- **INMETRO**
- **LABELO-PUCRS**
- **MCTI**
- **Metalfrio**
- **MMA**
- **MME**
- **Nidec Global Appliance**
- **Refrimate**
- **SDIC / ME**
- **Tecumseh**
- **U4E**
- **UL do Brasil**

The new regulation will aim to reduce energy consumption in the commercial sector by over 15% compared to the business-as-usual scenario (10 years after implementation)

Thank you!

Secretaria Nacional de Transição Energética e Planejamento

Ministério de Minas e Energia

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sntep@mme.gov.br

SECRETARIAT OF
PLANNING AND
ENERGY DEVELOPMENT

MINISTRY OF
MINES AND ENERGY

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Chile’s Ongoing Process on Setting MEPS for CRE and Leveraging the U4E Guidelines

14:50-15:00 UTC

Isaac Saez Alfaro, National Consultant Chile, UNIDO

OBJECTIVES

The project considers the following general objectives:

- Develop national MEPS for refrigerated display counters and guidelines that will include best practices for cold rooms.
- Raise awareness of both end users and refrigeration technicians about the impact of the use of RAC equipment.
- Test the energy efficiency measures developed on a pilot scale.

PARTICIPATING NATIONAL ENTITIES

- **Ministry of Environment:** Is the state body in charge of the design and application of policies, plans, and programs in environmental matters

- **Ministry of Energy:** It is the Government institution responsible for preparing and coordinating the plans, policies, and standards for the development of the energy sector.

- **Superintendency of Electricity and Fuels (SEC):** In charge of the elaboration of the test protocols, of authorizing the laboratories and certification bodies in the country.

ACTIVITIES TO DATE

A. COTA Consultancy study "Promoting energy efficiency of cold rooms - cold chambers and refrigerated display counters in Chile"

- A characterization of the Chilean market for refrigerated display counters and cold rooms was carried out through interviews with entities participating in the commercial refrigeration market in Chile, as well as information provided by the SEC.

- The information on the refrigerated display case market served as the basis for the study conducted by LBNL.

B. Project launching workshop, the result of COTA's study.

- The workshop was successfully carried out, with the participation and broad interest of the entities that make up the commercial refrigerated display counters market in Chile.

ACTIVITIES TO DATE

C. Preparation of MEPS for refrigerated display counters.

- Using as a central axis what was developed by LBLN that considers the U4E Model Regulation Guidelines, a document with the official format of the Chilean Ministry of Energy is being prepared to be sent later for public consultation.

D. Elaboration of guidelines for refrigeration chambers

- Informative guides are being developed, based on international standards and experiences, to establish best practices in the construction, start-up, operation and maintenance of cold rooms.

- Adapt and implement the “Zero Leakage” program in Chile.

PILOTS

- Informative workshops and face-to-face or videocall interviews are being arranged with entities participating in the national commercial refrigeration market. The objective of these workshops is to raise awareness participants on the progress and proposals to date, while beginning to select potential candidates for the pilot projects.

- The selection criteria for the pilot companies will be defined.

- Once the pilots are selected, improvements related to technologies, efficient methods of use, best practices, among others, will be applied and the cases will be studied.

Ministerio del Medio Ambiente
Gobierno de Chile

SHORT-TERM ACTIONS

- Continue discussing the results obtained by LBNL regarding the MEPS and the recommendations they provide in the same document.
- Finalize guidelines for best practices in cold rooms.
- Start with workshops to raise awareness about the proposals.
- Identify the four pilot projects to demonstrate the application of the guidelines in two cold rooms and the minimum standards in two refrigerated display counters.

Q&A Session

Closing Reflections on Next Steps for the Guidelines

15:25-15:30 UTC

Dr. Tao Wang, Clean Cooling Collaborative

Thank you

Please fill in the feedback survey.
Link available in the chat window and here:
https://forms.office.com/e/kM1kXW9tQS