



Energy Efficiency Management in the Appliance & Equipment Sector

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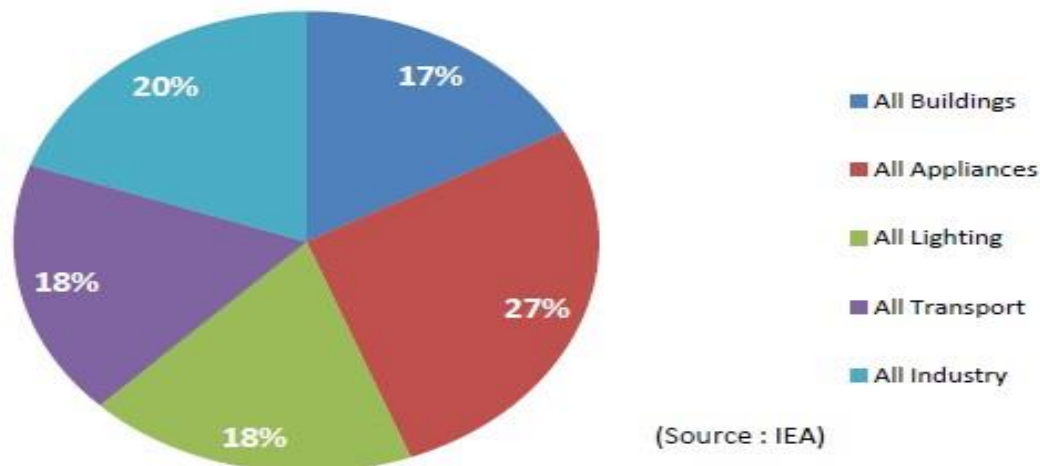
- » The biggest energy source from '74~'15 among IEA member countries was 'energy efficiency'
- » Major countries are focusing on enhancing national energy efficiency by establishing mid - to – long term goals
 - (EU) Reduce 40% of GHG by '30, use 27% of total energy in renewables, increase energy efficiency by 27%

Share of appliances & equipment sector in energy saving

Share in potential CO₂ reduction: 45%

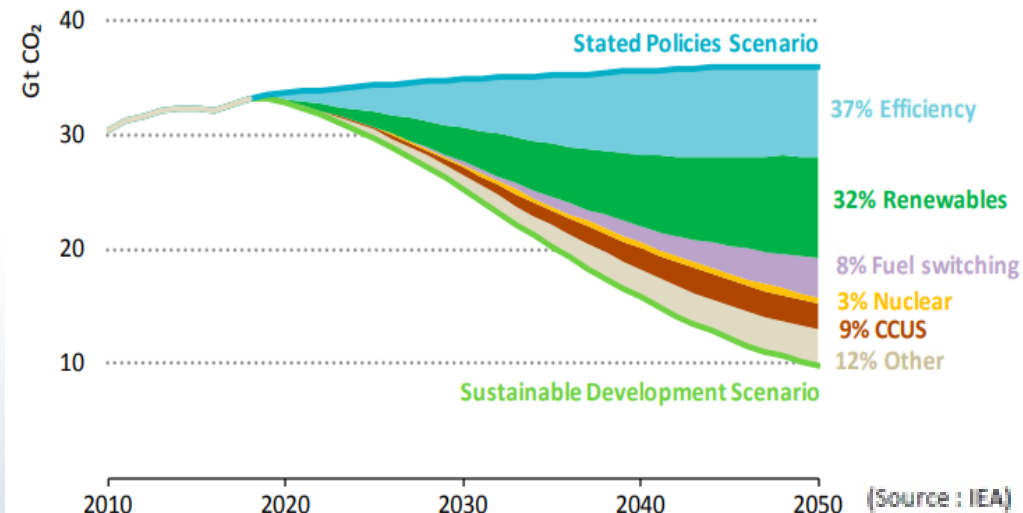
- The International Energy Agency (IEA) analyzes that 45% of total potential CO₂ emissions reduction by 2030 will be the appliances & equipment sector (including lighting, based on OECD+EU)

Reductions in CO₂ emissions by 2030



2050 CO₂ emissions reductions contribution

- Energy efficiency is the primary “fuel” of choice in most regions, because of its cost-effectiveness
- No decarbonization pathway is achievable without rapid and significant deployment of energy efficiency measures



What are the Energy Efficiency Programs (EEP) in the Appliance & Equipment Sector?

2. High-Efficiency Appliance Certification Program

- ☑ **Voluntary** Certification
- ☑ 23 Items: Lighting, Pump, etc.
- ☑ Certificate and Incentives for high-efficient products

1. Energy Efficiency Labeling & Standard Program

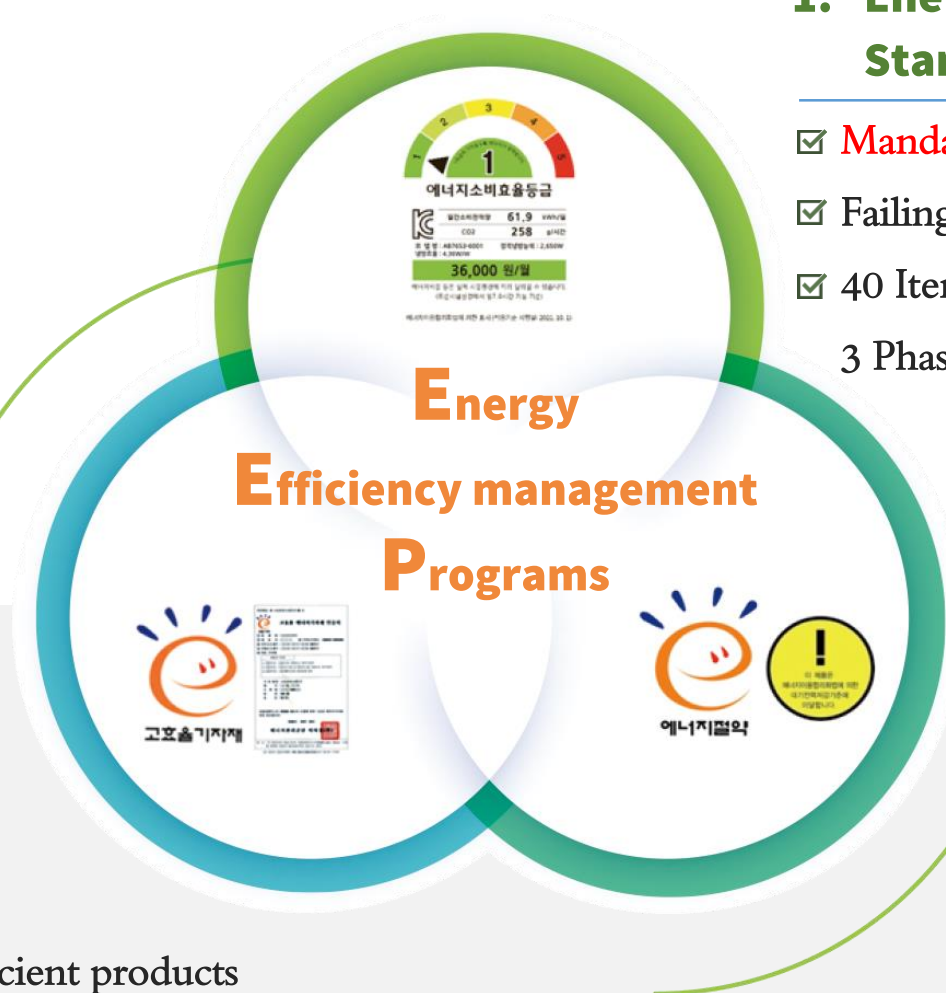
- ☑ **Mandatory** 5 rating Label with MEPS
- ☑ Failing to meet MEPS restricts on Production and Sales
- ☑ 40 Items: Refrigerator, Washing Machine, 3 Phase Induction Motor, etc.

3. e-Standby Power Reduction Program

- ☑ **Mandatory + Voluntary** system
- ☑ 18 Items: Printer, Audio, etc.
- ☑ Automatic shift to low standby power mode

Meet Standard: Energy-saving Mark

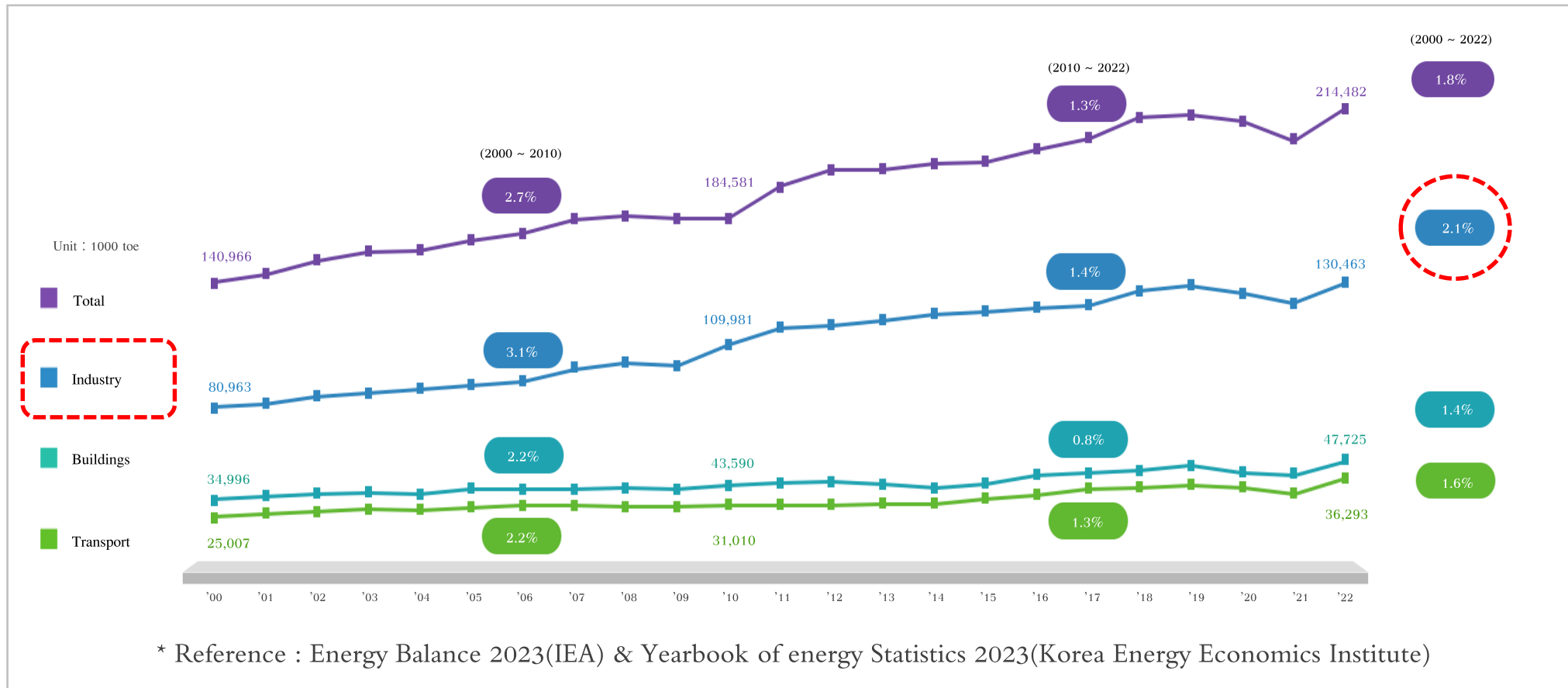
Below Standard: Warning label required



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Energy Consumption Status in South Korea

- » Energy Consumption in Industry, Buildings and Transport Sectors has **steadily increased**.
Particularly, Industry sector is higher than other sectors due to diversity of technologies & devices

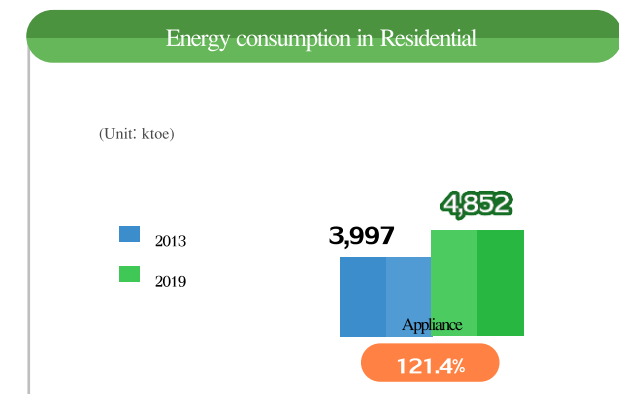
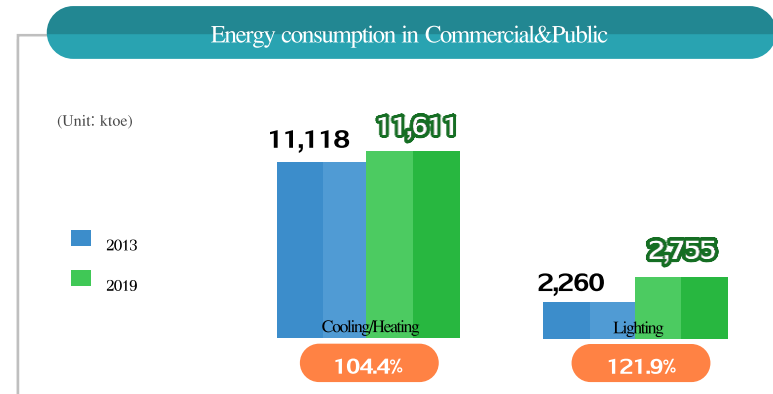
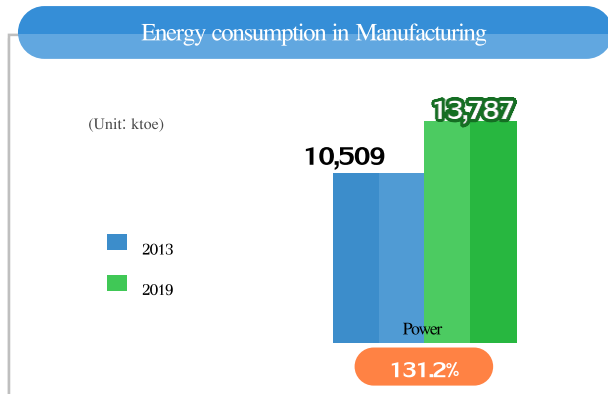
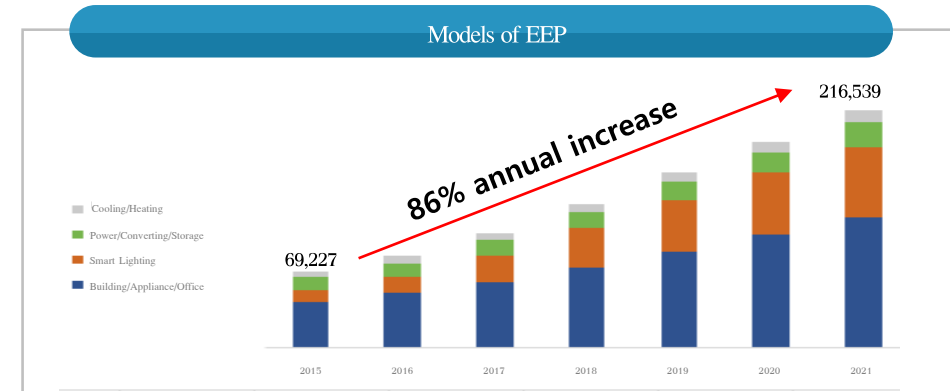
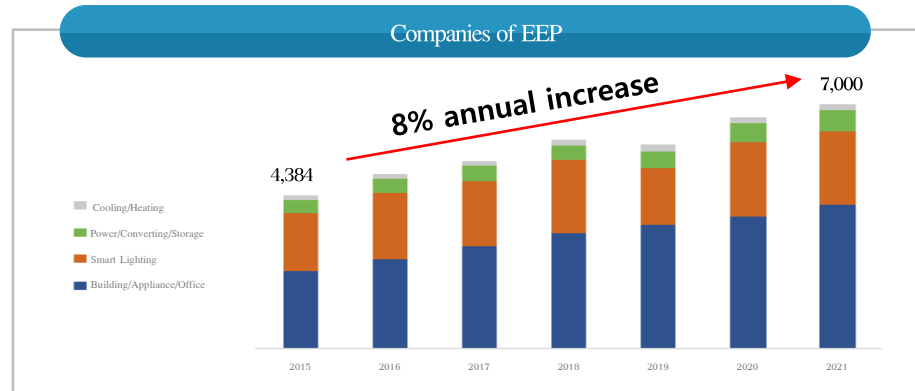




Appliance

Energy consumption has steadily increased due to diversity of appliance & equipment

- » Energy consumption in the appliance & equipment sector has increased
- ➔ Energy consumption management is required by expanding items and models of EEP



1-5

Energy Efficiency Labeling & Standard Program

1

Labeling

Consumers can easily purchase high efficient products

- » Manufacturers and importers are required to label products from production and import stage (Mandatory)
- Mandatory 1 – 5 rate labeling program

1 – 5 Rate Labeling

- ✓ Label based on product energy efficiency (Rate 1 = most efficient)

→ Prohibition of production and sale of products that do not meet MEPS



Program Overview

- ✓ Legal Basis: Energy Use Rationalization Act
- 1-5 rating energy grading system (mandatory)

- ✓ Started in 1992, Currently Total 40 Items

Rating-labeled (23 Items)	MEPS only (17 Items)
Refrigerators, Kimchi-fridges, Washers, Water dispensers, LED lamps, Dryers, etc.	Fans, Incandescent bulbs, Fluorescent lamps, Motors, Transformers, Set-top boxes, etc.

What is Minimum Energy Performance Standards (MEPS) ?

A mandatory energy efficiency standard that aims for fundamental national energy conservation by prohibiting the manufacturing and sales of low-efficiency products that do not meet specific energy efficiency criteria

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Energy Efficiency Labeling & Standard Program

1

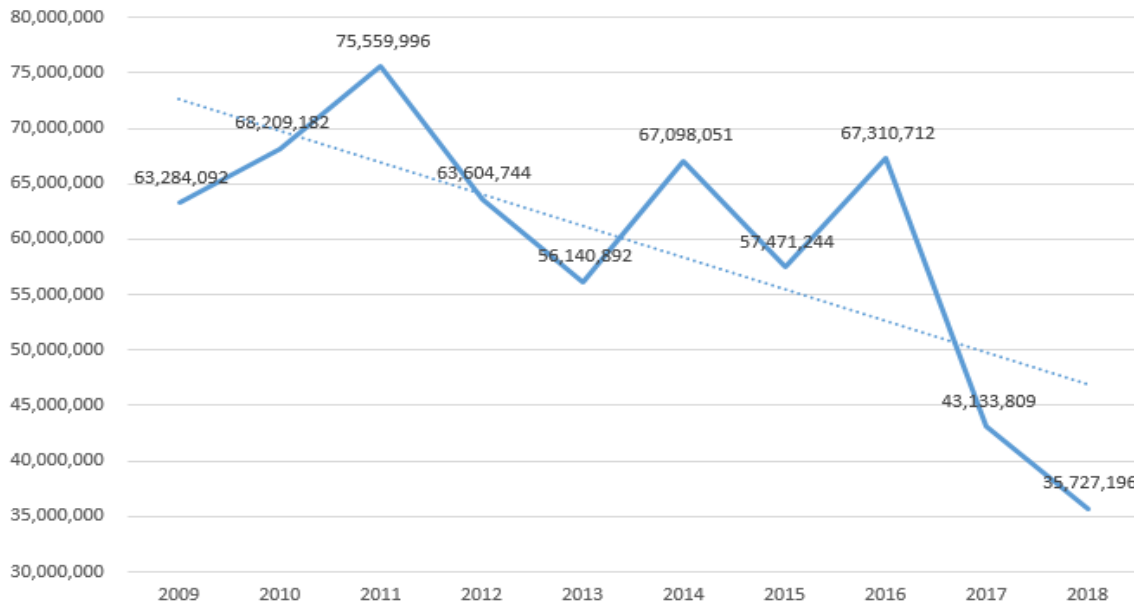
Labeling

Consumers can easily purchase high efficient products

Market Status of fluorescent lamps

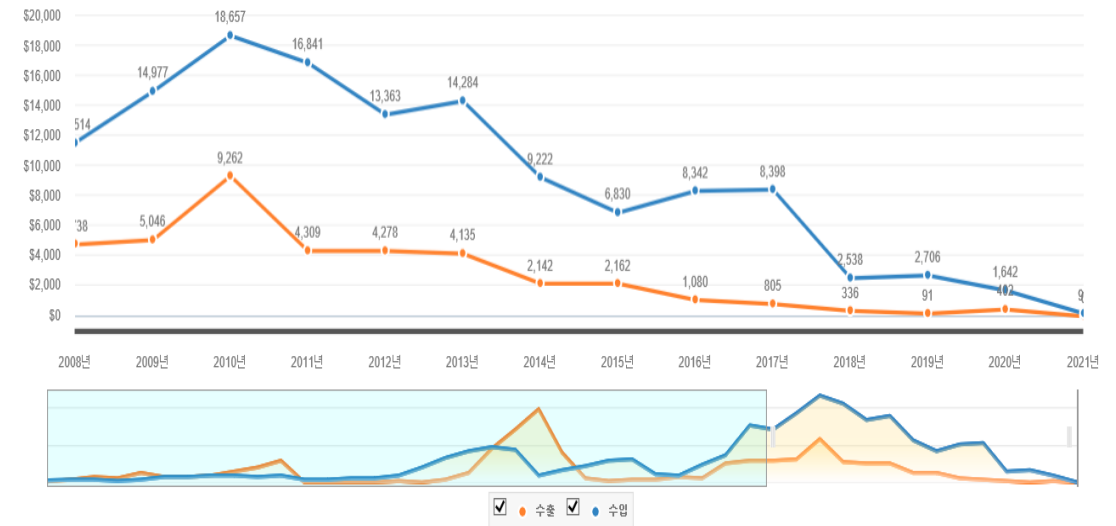
Domestic sales volume of fluorescent lamps has been **continuously decreasing since 2000** after LED light installation was made mandatory in public organizations and the smart lighting industry developed

Yearly sales volume of fluorescent lamps



*Source: KEA Sales report of 2018, 'efficiency management equipment'

Import and export analysis of fluorescent lamps

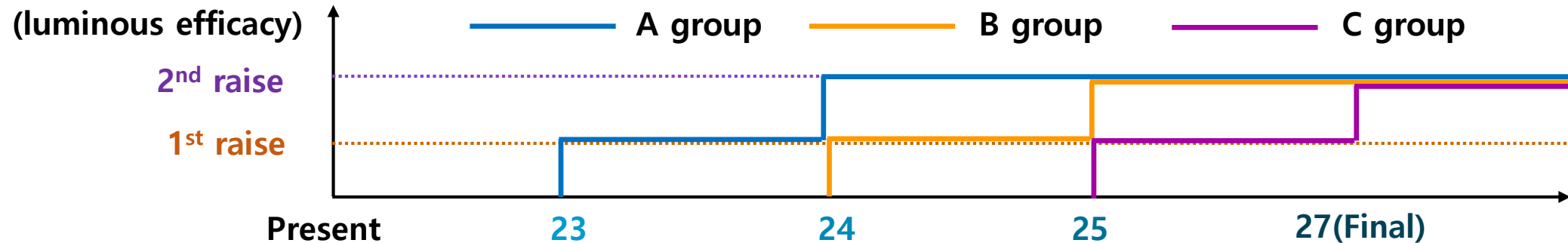


* Source: 2021 KITA K-stat analysis

Consumers can easily purchase high efficient products

Schemes to strengthen the standards for fluorescent lamps

Divided the models into three groups from highest sales volume to lowest and raised the minimum efficiency standards for each group across two occasions (-'27)



Cat.	Sales	Eligible products
A	Low	FPL 27W compact type / 32W round type / 40W round type
B	Medium	FPX 13W compact / 20W straight / FDX 26W compact / 28W straight / FPL 45W compact
C	high	32W straight / 40W straight / FPL 32W compact / FPL 55W compact / FPL 36W compact

- Revised the operation regulations of efficiency management (Aug. 21, 2023)
- Effective Dec. 31, 2023

- » Certify products meeting high-efficiency standards (**Voluntary**)
- Products meeting a certain EE standard are certified, issued a certificate, and marked

Target Items (23)

- ✓ **Lightings (5)** LED lamps, Fixtures, Smart lighting, etc.
- ✓ **Power (8)** UPS, Inverters, ESS, EV chargers, etc.
- ✓ **Cooling/Heating (7)** Boilers, Chillers, GHP, Heat/Humidity control, etc.
- ✓ **Insulation(3)** High-seal doors, etc.



Program Overview

- ✓ Legal Basis: Energy Use Rationalization Act
 - High efficiency certification system (Voluntary)
- ✓ Started in 1996 with Motors & Lamps
- ✓ Current 23 items
 - + New items (incl. Cold chain, Heat pumps) (TBD)

Reporting & Performance

✓ Registered items by year

Year	2022	2023	2024
Items	23	23	23
Companies	1,483	1,537	1,624
Models	58,082	64,714	73,732

- ✓ Energy saved: 602 kTOE
GHG reduced: 1,262 ktCO₂ (as of 2023)

Promotes Excellent e-Standby Power Reduction Products

- » Promotes sleep mode and standby power reduction when not in use (**Mandatory + Voluntary**)
- Mark attached to low standby power products, Mandatory warning for non-compliant items

e-Standby Power Reduction Program

- ✓ **Mandatory (13)** PC, Printer, Copier, Microwave, Modem, Bidet, etc.
- ✓ **Voluntary (5)** Router, Digital converter, Hand dryer, etc.



Program Overview

- ✓ Legal Basis: Energy Use Rationalization Act
- ✓ Started as voluntary in 1999,
Warnings mandatory since 2008
- ✓ Total 18 items
- ✓ To be integrated with
EE Labeling & Standard by 2027

Reporting & Performance

- ✓ Registered items by year

Year	2022	2023	2024
Items	21	20	20
Companies	1,027	899	925
Excellent Models	65,977	59,007	56,915
Warning Models	708	495	535

- ✓ Energy saved: 98 kTOE
GHG reduced: 204 ktCO₂ (as of 2023)

✓ Energy Efficiency Labeling & Standard Program

Category	2015	2017	2019	2020	2021	2022	2023	2024
No. of Items	28	27	32	33	33	33	34	34
No. of Declared Businesses	2,223	2,738	3,448	3,707	4,166	4,390	4,888	5,145
No. of Models	39,820	52,148	69,349	82,383	93,680	106,975	130,567	141,301

✓ High - Efficiency Appliance Certification Program

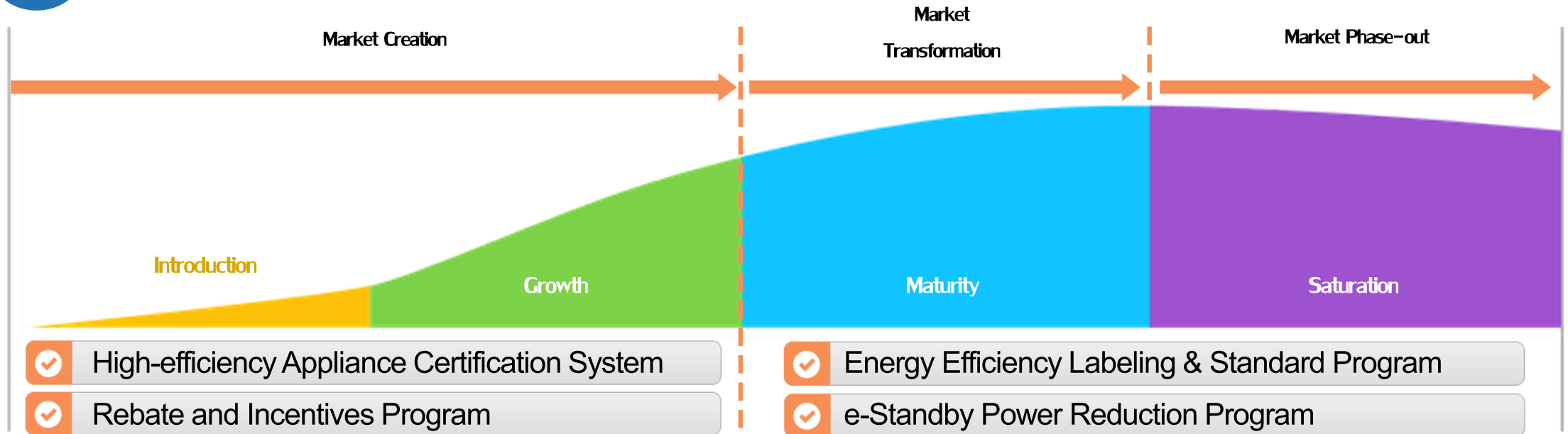
Category	2015	2017	2019	2020	2021	2022	2023	2024
No. of Items	47	37	22	22	23	23	23	23
No. of Declared Businesses	2,340	1,616	1,376	1,463	1,440	1,483	1,537	1,624
No. of Models	15,860	24,318	39,373	47,100	51,732	58,082	64,714	73,732

✓ e-Standby Power Reduction Program

Category	2015	2017	2019	2020	2021	2022	2023	2024
No. of Items	21	21	21	21	21	21	20	20
No. of Declared Businesses	564	728	826	854	960	1,027	899	925
No. of Models	20,589	29,495	43,690	52,777	57,115	66,685	59,502	57,450



Energy Efficiency Improvement Step



01

Market
Creation

High-efficiency
Appliance Certification

- The Korean government certifies high-efficiency appliance & equipment that meet standard
- 4 Sectors with 23 items: Lightings, Power, Cooling/Heating, Insulation

02

Market
Transformation
& Phase-out

Energy Efficiency
Labeling & Standard

- Mandatory energy efficiency rating for 40 items that need energy consumption management
- Energy efficiency rating: 23 items, Only MEPS: 17 items

e-Standby Power
Reduction

- Power reduction and warning mark for promoting excellent standby power reduction home & office appliance



Thank You!

