

0. Corporate Profile

As of end-February 2017

Company name	Lawson, Inc.
Head office	East Tower, Gate City Ohsaki 11-2, Osaki 1-chome, Shinagawa-ku, Tokyo 141-8643 Japan
President and CEO, Representative Director	Sadanobu Takemasu
Date established	April 15, 1975
Capital	58,506.644 million Yen
Employees	9,403
Business activities	Franchise chain development of "Lawson", "Lawson Store 100" and "Natural Lawson"
Total net sales	2,158 billion yen <FY2016>
Number of stores	13,111 (Japan)
Operating regions	47 prefectures of Japan, cities of Shanghai, Chongqing, Dalian, Beijing and Wuhan in China, Indonesia, Hawaii in USA, Thailand, Philippines

* The total number of stores refers to the number of convenience stores operated by the consolidated group and includes stores operated by Lawson Store100, Inc., Lawson Okinawa, Inc., Lawson Minamikyushu, Inc. and Lawson Kochi, Inc.

<Group Companies> ■ Consolidated or Non-consolidated Subsidiary ◆ Affiliated Company

■ Lawson Sanin, Inc. ■ Lawson Store 100, Inc. ■ SEIJO ISHII, Inc. ■ Lawson (China) Holdings, Inc.
■ Shanghai Lawson, Inc. ■ Chongqing Lawson, Inc. ■ Dalian Lawson, Inc. ■ 浙江羅森百貨有限公司
■ Saha Lawson Co., Ltd. ■ Lawson USA Hawaii, Inc. ■ Lawson HMV Entertainment, inc. ■ UNITED CINEMAS, inc.
■ Lawson ATM Networks, Inc ■ Lawson Travel, Inc. ■ Best Practice Inc. ■ Lawson Will, Inc.
■ Lawson Digital Innovation, inc.
◆ Lawson Okinawa, Inc. ◆ Lawson Minamikyusyu, Inc. ◆ Lawson Kochi, Inc.

1. Selection of Non-Freon (CO₂ Refrigerant) Equipment

1. CO₂ Refrigeration System Installation Result

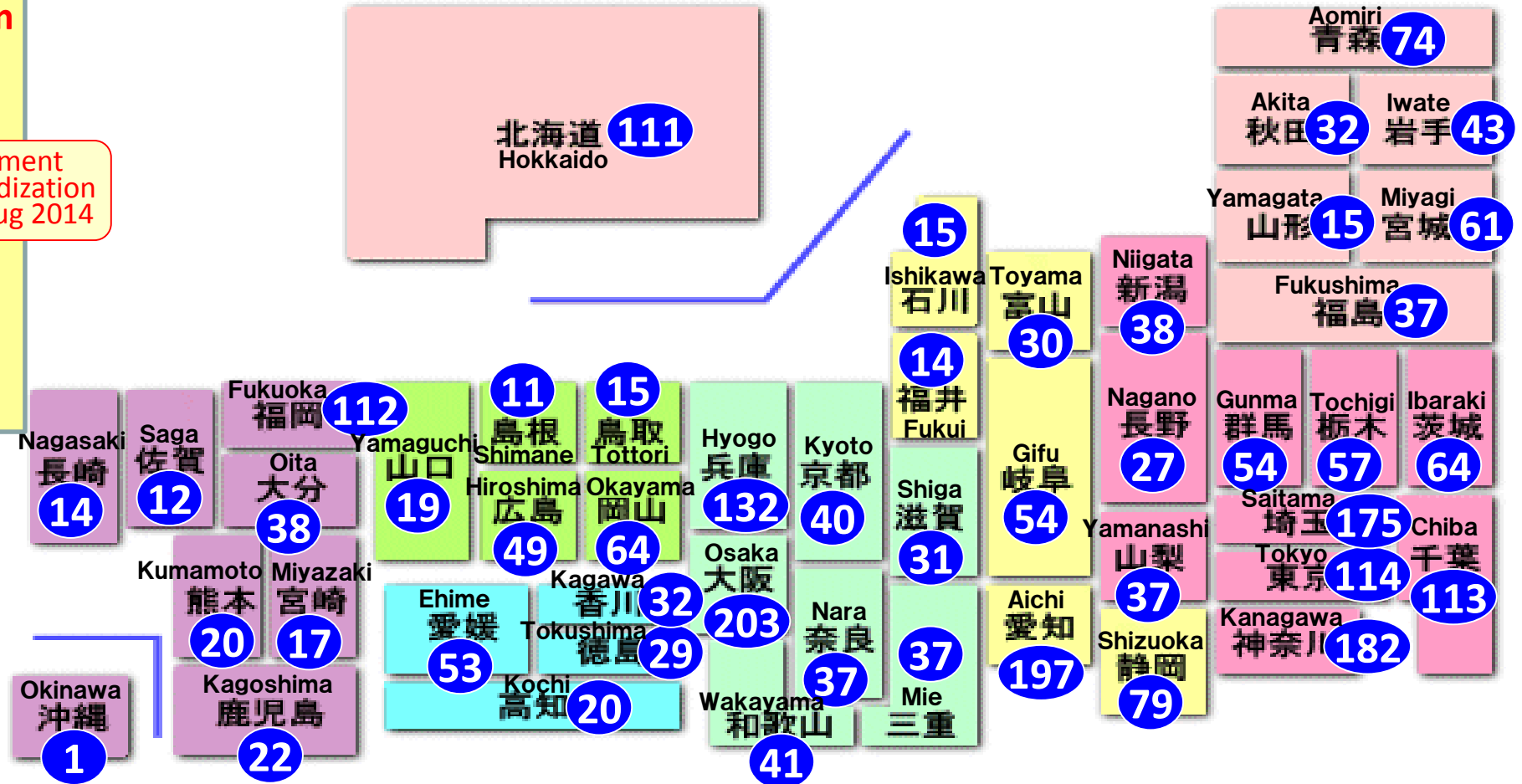
Installation in 2,672 Stores in 47 Prefectures (End of Jan. 2018)
 ⇒ Expect to install to 3,500 stores by end of Feb.2019

■ 2,672 stores installed
 CO₂ Refrigeration System

FY2010	1 stores
FY2011	50
FY2012	24
FY2013	80
FY2014	427
FY2015	717
FY2016	733
FY2017	695

(As of end-Jan 2017)

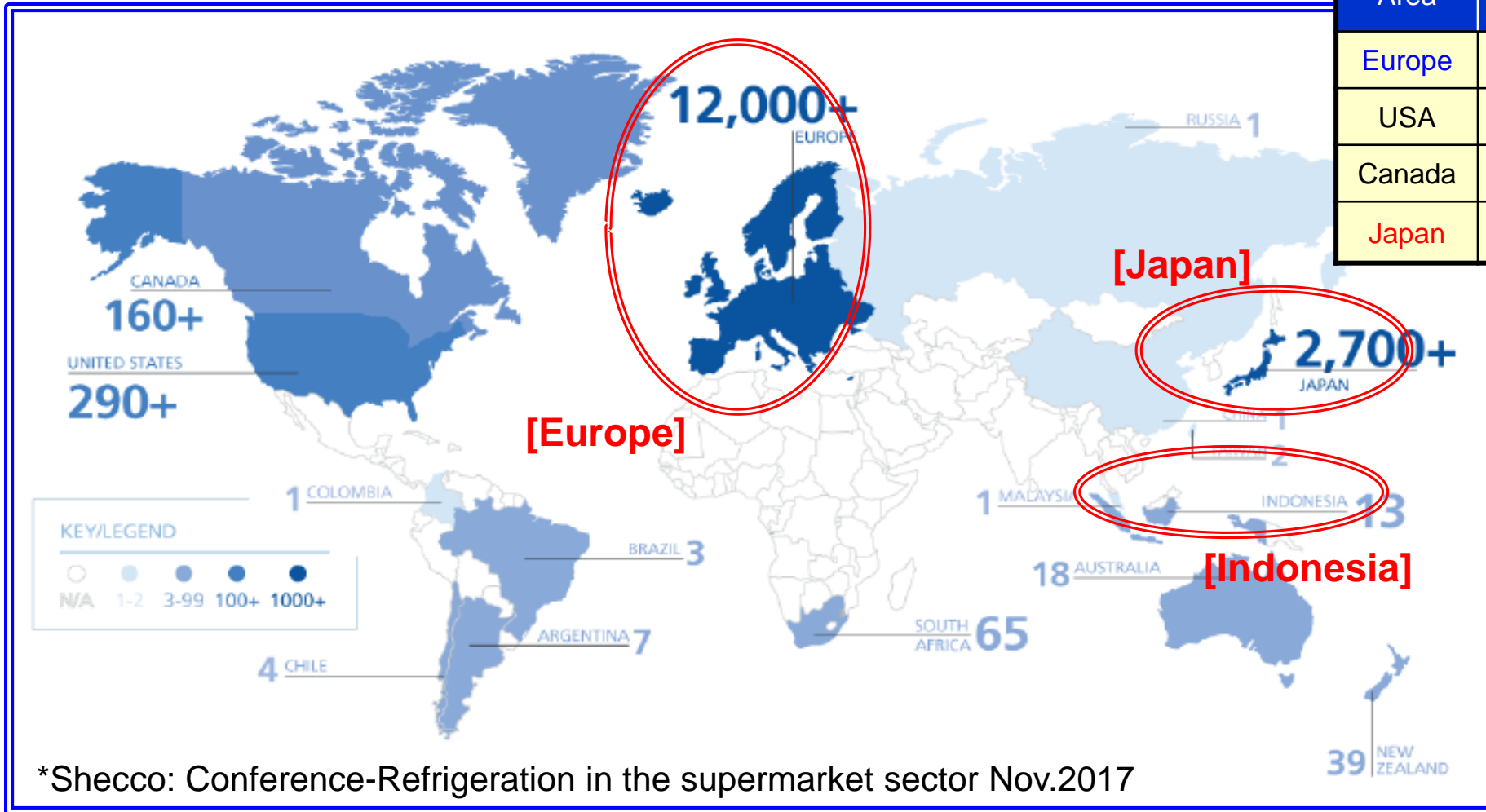
Equipment standardization since Aug 2014



1. Stores Using Equipment Containing Natural Refrigerants in the World

[Stores Using TC CO2 System in the World] *As of Aug. 2017

Area	2015	2017	Increase rate
Europe	5,500	12,000	118%
USA	52	290	458%
Canada	139	160	15%
Japan	1,500	2,700	80%

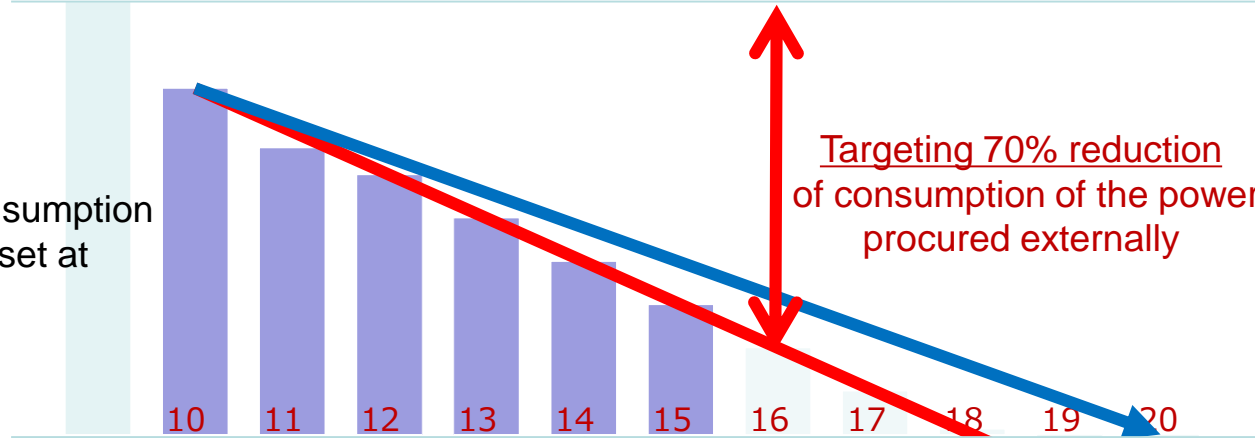


Although Europe is said to have a large number of stores using the CO2 refrigeration system, only the total number of Lawson stores that have introduced the CO2 refrigeration system will exceed 2,700 at the end of Feb. 2018.

1. Efforts for realizing ZES (Zero Energy Store)

- In order to realize ZES in 2020, we are raising the reduction goal every year from 20% reduction in FY2010 and opening the stores for experiments of new technologies. As a goal this fiscal year, we set 70% reduction (similar to the previous fiscal year) and we will introduce new technologies, verify the energy-saving execution and management system and undergo evaluation of the energy-saving building for the third-party certification (BELS).
- We set 120% reduction in 2020 as a stretch goal (i.e. the electricity generating building PES: Positive Energy Store) and aim at becoming the local infrastructure bases that can supply electricity to neighboring communities.

Electrical consumption in FY2010 is set at 100%.



FY2020

Goal	Realization of ZES store
Stretch goal	Realization of PES store

According to the result of experiment, the 20% reduction model has been achieved in the store and final costs are being adjusted in order to introduce the 30% reduction model. 40% reduction model is being developed.



2010
Kyotanabe
Yamatenishi Store



2012
Ebina
Kamiimaizumi
2-chome Store



2013
Yurihonjo
Yamamoto Store



2014
Panasonic Mae
Store



2014
Toyohashi Akemi
Kogyo Danchi Store



2015
Yumesaki Smart
Interchange Mae Store



2016
Kodaira Tenjintyo
2-chome Store

1. Examples of Environmentally-friendly Lawson Stores

Lawson, Inc. opens in Gunma the first convenience store built with highly heat-insulating **cross laminated timber (CLT)** made of **Japanese Cedar grown in Japan** as a model of the environmentally-friendly store targeting energy saving and reduction of CO2 emission

On Friday, January 19, 2018, Lawson, Inc. (having its headquarters in Shinagawa-ku, Tokyo) opens the Lawson Store of Kido-cho, Tatebayashi (591-1, Kido-cho, Tatebayashi-shi, Gunma) that is a wooden store built as a model of the environmentally-friendly store using the cross laminated timber (hereinafter called CLT) with high heat insulation capacity as a structural and interior material of the convenience store for the first time.



<Image of the store appearance>



<CLT (Cross Laminated Timber) made of Japanese Cedar grown in Japan>

The CLT (Cross Laminated Timber) is the strong and highly heat-insulating wooden construction material made by bonding thick wooden plates with adhesive so that they become a multi-layer board and wood grains of adjoining layers are crossing each other at right angles. As buildings' energy saving and reduction of CO2 emission can be expected, Japanese government is targeting penetration of the CLT in 2020.

For this store, we use the CLT (Cross Laminated Timber) made of Japanese Cedar grown in Japan and other wood grown in Japan as the store's structural and interior materials so that the building's heat insulation property is improved and electricity consumption is reduced in order to save energy and reduce CO2 emission at the time of building the store. In addition, the externally procured electricity of the store will be about 60% less than that of the standard stores in FY2016 because of introduction of the latest energy-saving measures and the energy creation measure using the photovoltaic installation.



1. Examples of Environmentally-friendly Lawson Stores

Environmentally-friendly Model Store

Lawson Store of Kido-cho, Tatebayashi

(Opened on Jan. 19, 2018)

In order to hand over to the next generation the rich blessings of the earth, we are promoting construction of the environmentally-friendly stores.

By introducing to the stores the leading-edge energy creating and saving measures, **electricity consumption of the stores will be 60% less** than that of the conventional stores.

*Compared with FY2016

Use of highly heat-insulating CLT (Cross Laminated Timber) made of Japanese Cedar grown in Japan



1 CLT (Cross Laminated Timber) made of Japanese Cedar grown in Japan

店舗の屋根・天井部に、断熱性の高いCLT(直交集成板)を使用し、建物の断熱性能を向上。空調機器の負担を軽減することで省エネを実現するとともに国産の木材を使用することで、店舗建設時のCO₂排出量を削減。
*CLTはCross Laminated Timberの略称で、平成28年4月に建築基準法が公布施行され、国内での一般利用がスタートしている木質建築材料です。

2 Automatically opened/closed ventilation window

中間期(3月~5月、9月~11月頃)に、窓を自動で開閉して快適な外気を取り入れ、空調機器の負担を軽減することで省エネを実現。

3 Geothermal heat utilizing air supply pit*

床下ピットに地熱を採熱して店内の換気に活用。室内温度に近い外気を給気することで、空調効率をアップ。(夏期25℃、冬期14℃を想定)

4 Refrigeration showcase (with doors)

店内の要冷ケースにペアガラスの扉を設置。冷気漏れを防ぐとともに、断熱性能を高めることで、冷感効率をアップ。

5 Refrigerators and freezers using CO₂ as refrigerant

フロン類と比較して地球温暖化係数が約1/4000のCO₂冷媒を使用してノンフロン化。地球温暖化防止とともに、大幅な省エネを実現。

6 Ultra Eco-Ice (Heat storage tank for refrigeration equipment)

要冷室外機の運転を後置に行い蓄熱した冷熱を昼間の要冷ケースの冷却に利用。エネルギーの消費効率を高め省エネと蓄エネを実現。

7 LED lighting with dimming effect

店舗の照明器具全てにLED照明を使用して省エネを実現。天候に合わせて光の明るさを調節することで、さらに消費電力を削減。

8 Photovoltaic system,

店舗屋根上に24kW相当の太陽光パネルを設置して発電。14kW相当は店舗の消費電力に充てて、10kW相当は売電。

Energy-saving operation support system

店舗に設置したタブレットに「省エネ」の実施案内を表示するとともに、店舗設備(要冷・空調・照明等)を電力ピーク時に自動で「節電」できるシステムを導入!

「省エネ」の取組み

日常的に行う省エネの実施案内をタブレットに表示

「節電」の取組み ~電力の安定的な供給に貢献~

①電力ピーク時に節電の実施案内をタブレットに通知

②自動で節電を実施

IoT技術の活用から電力需要をコントロールし、より効果的に電気を活用するスマートエネルギーストアを目指します。

2. What We Found in Our Efforts

3. What We Found in FY2016 Leakage Report

Leakage by position and age

- i. Leakage by age: leaked mostly from the equipment having used for less than 10 or 15 years
- ii. Leakage by position of leakage: Leaked mostly from the equipment that we expected least

発生時 経年数	ケース	機器	配管	自然リーク	店舗側	総計	経年別 構成比
0～5年	13	1,473	1,813	1,035	11	4,345	11.1%
5～10年	398	3,449	3,698	2,044	148	9,737	24.8%
10～15年	1,023	4,694	4,660	3,123	39	13,539	34.5%
15～20年	155	2,467	2,659	821		6,102	15.5%
20～25年	62	1,301	573	483		2,419	6.2%
25年以上	137	1,295	1,145	473	6	3,141	8.0%
総計	1,873	14,678	14,549	7,979	204	39,282	100.0%
部位別 構成比	42.1%		37.0%	20.8%			
	機器側漏洩		配管側漏洩	管理者側			

13% of leakage was from the less-than-10-year-old equipment and 28% was from the less-than-15-old equipment. It is important to take measures for the equipment for reduction of leakage in the future.

3. What We Found in FY2016 Leakage Report

Leakage by equipment

- i. Leakage of separately installed type: Almost all (93%) leakage is from this type.
- ii. Leakage of air conditioners and built-in type: Total of both is about 6%.

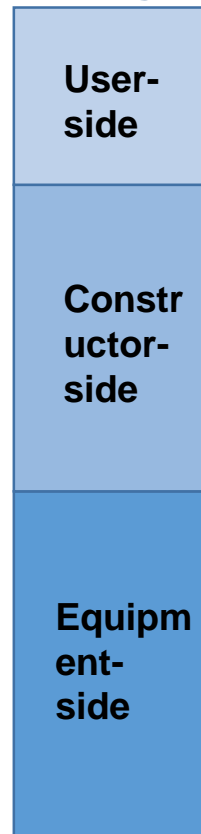
発生時 経年数	コンデンシン グユニット	冷凍冷蔵 ユニット	エアコン	内蔵型冷蔵 ショーケース	内蔵型業務用 冷蔵庫	総計	経年別 構成比
0～5年	3,218	601	415	106	3	4,345	11.1%
5～10年	8,524	641	422	150	0	9,737	24.8%
10～15年	11,327	1,466	460	236	50	13,539	34.5%
15～20年	4,796	839	145	314	7	6,102	15.5%
20～25年	2,139	207	24	47	2	2,419	6.2%
25年以上	2,338	676	11	102	13	3,141	8.0%
総計	32,342	4,432	1,477	956	76	39,282	100.0%
部位別 構成比	93.6%		3.8%	2.6%			
	別置型要冷機器		空調	内蔵型要冷機器			

For reduction of leakage during use, it is important to take measures for the separately installed refrigeration equipment. Even though the air conditioners and the built-in type are also important, measures for the separately installed refrigeration equipment should be prioritized.

For reduction of leakage during use,

we will understand the position and cause of leakage and take measures.
But, there is a limit with refrigerant management alone.

Manager



- To keep the manager-side leakage within 15%:
- To keep the constructor-side leakage within 15%:
- To keep the equipment-side leakage within 15%:

1. Energy-saving effects (Comparison of stores with HFC/CO2 equipment opened in FY2014/2015)

We surveyed the stores opened in FY2014/2015 and operated for a full year of FY2016.

We compared electricity consumption and its cost of total 1,458 stores consisting of 889 stores using CO2 as refrigerant and 569 stores using Freon as refrigerant.

- **The energy-saving effect** of the stores with CO2 refrigeration equipment **is 9.5% and the cost-saving effect is 14.0%.**

2. What we found in FY2016 leakage report

We aggregated the data of the 3,333 reports on the refrigerant filling and recovery conducted in FY2016.

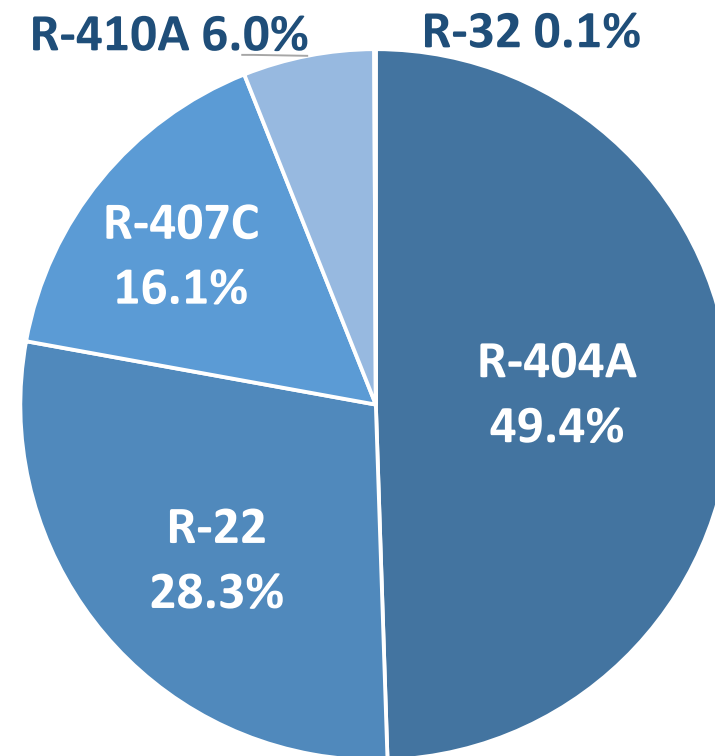
We aggregated by age, position of leakage, and manufacturer in units of CO2 equivalent.

- **Leakage occurred mostly on the equipment** and not on the piping including solenoid valves.
- **More than 35% of overall leakage was from the equipment having been operated for less than 10 years.**
- **Leakage during use was mostly from the separately installed refrigeration equipment.**
- **Limit of refrigerant management on the administrator side**

3.To achieve the Kigali Amendment

3. To achieve the Kigali Amendment Leakage by refrigerant(CO2-t)

- a. R-404A takes almost 50% of the overall leakage. It increased because of existing equipment's change from HCFC.
- b. Leakage of R-22 is also large. It was used in about 1500 stores at the beginning of FY2016 and about 700 stores at the end of FY2017.

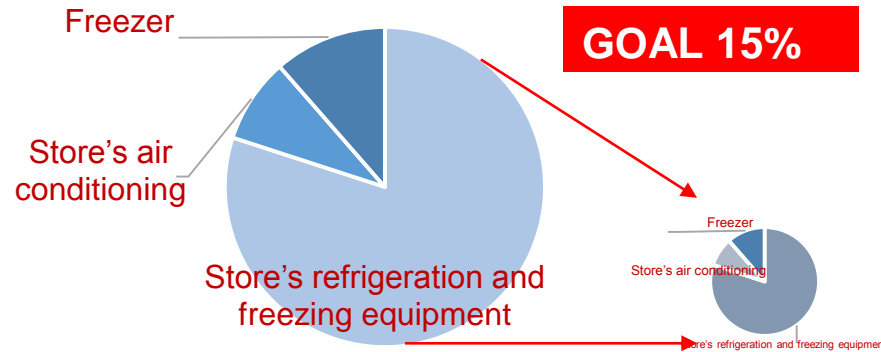


Phasing down HFC starts in the course of the change from HCFC to HFC.

Change of the refrigerant of the existing equipment will be an important issue in the future.

3. To achieve the Kigali Amendment

Priority considering cost effectiveness



- a. It is important to eliminate use of HFC on the refrigeration and freezing equipment.
- b. Regarding the air-conditioning equipment, cost shall be prioritized. Reduction in GWP shall be considered if possible.

Planned lifetime	Less than 10 years	10 to 20 years
Newly installed equipment	<ul style="list-style-type: none"> ● Until acquisition in 2024, to be introduced with cost prioritized. ● Equipment with no HFC will be introduced after 2025. 	<ul style="list-style-type: none"> ● We will introduce early the equipment that eliminate use of HFC considering the output quota of HFC in 2034. ● For the equipment that can be used only with HFC, we will minimize the number of the introduced equipment.
Existing equipment	<ul style="list-style-type: none"> ● Present operational status continues until 2024. ● Equipment with no HFC will be introduced at the time of replacement after 2025. 	<ul style="list-style-type: none"> ● In 2019 through 2034, we will change to the refrigerant that eliminates use of HFC without any strain. ● Or, we will use the low-GWP refrigerant through drop-in.

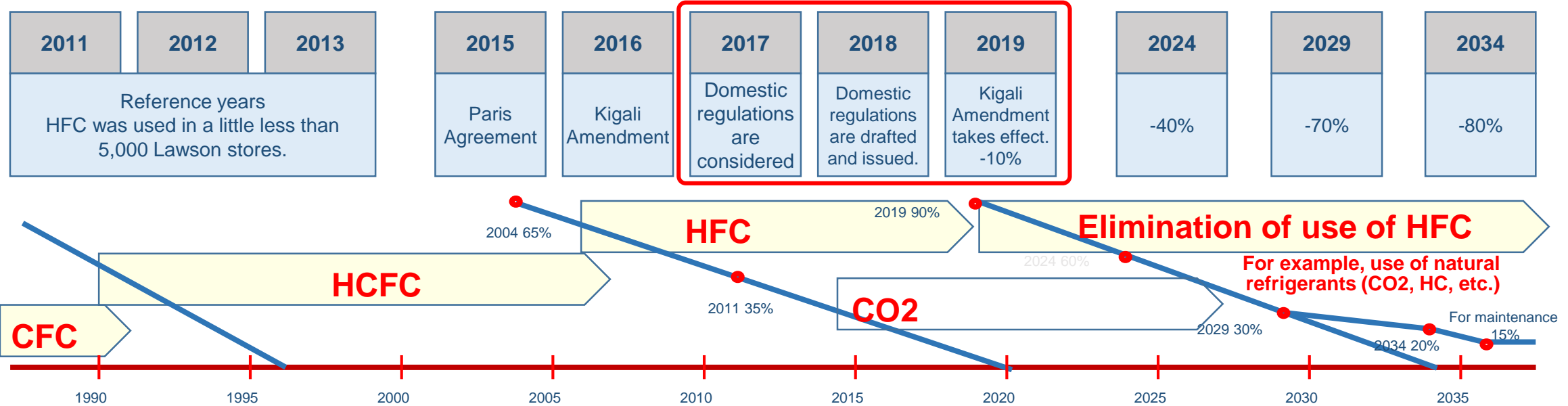
What we found for meeting the Kigali Amendment

- **We need to consider the business type** as a measure based on whether the equipment that realize elimination of HFC are the major field.
- In the food retail, refrigeration **showcase's realistic lifetime is 15 to 20 years.**
- Change of R22 refrigerant has not been completed. **Which should we prioritize, the measures for HCFC or the ones for HFC?**
- **We should realize use of no HFC on the newly installed equipment as soon as possible.** However, we cannot achieve the goal by taking measures only for the newly installed equipment.
- Taking measures for the existing equipment is also important. The **cost-effective measures** are required considering the amount of equipment in stock.

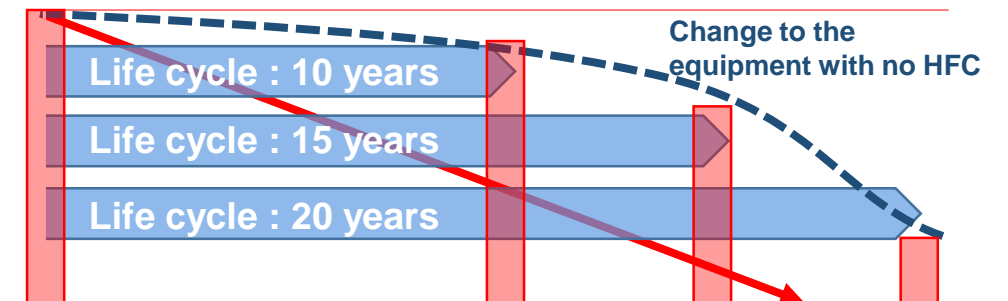
4. Roadmap for Eliminating Use of HFC from the Viewpoint of the User

4. Roadmap for Eliminating Use of HFC from the Viewpoint of the User

On Nov. 20, 2017, UNEP announced that the Kigali Amendment would become effective on Jan. 1, 2019 as the number of ratifying countries exceeded 20 that was a condition for the Kigali Amendment to take effect.

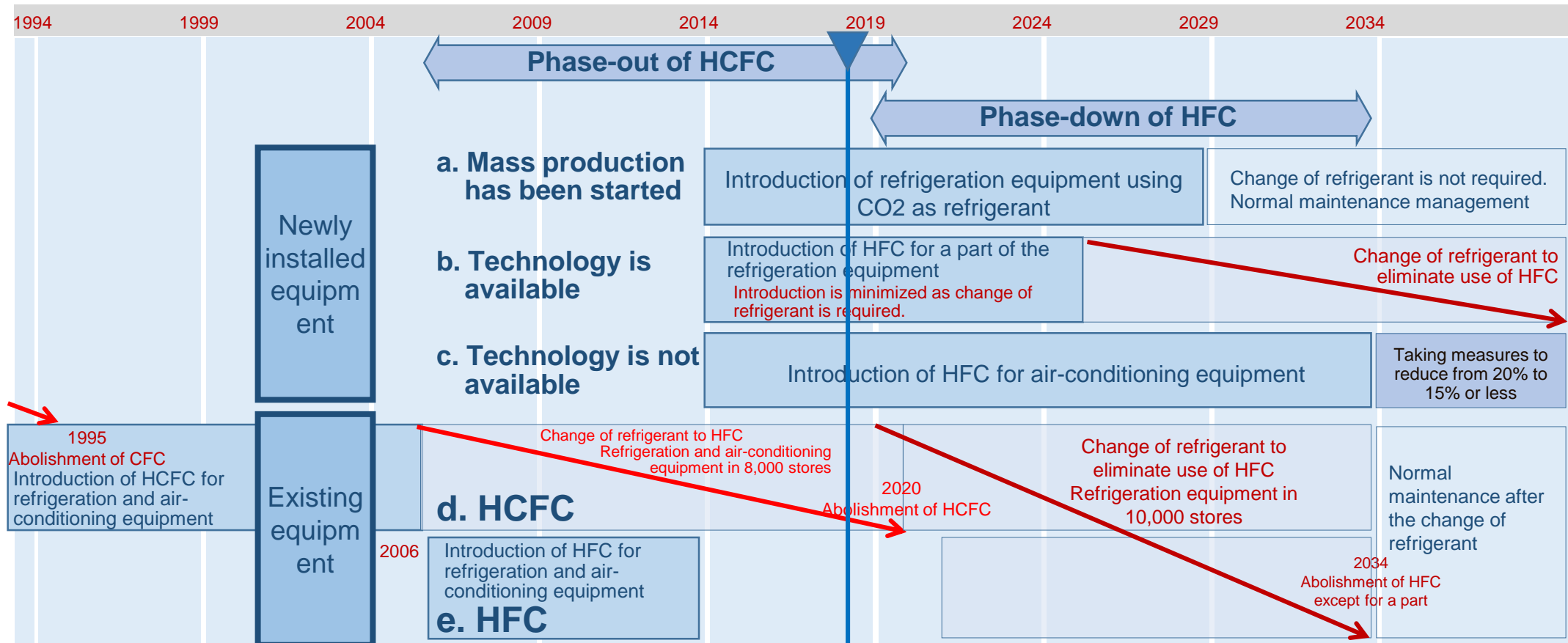


In regard to the equipment for 900 stores among the 1,200 new stores where the equipment are introduced in FY2018, we will have a risk of replacing the equipment for the change of refrigerant ten years later.



4. Roadmap for Eliminating Use of HFC from the Viewpoint of the User

- Air conditioning equipment: R410 ⇒ R32 ⇒ ??? Cost shall be prioritized when the timing of change is determined.
- Refrigeration equipment: Cost is prioritized and present equipment shall be selected when the maximum lifetime of the equipment is less than 10 years.
The equipment using no HFC shall be selected promptly when the lifetime of the equipment is 10 years or more.
When the mass-produced equipment are not available, investment shall be minimized until the mass production is started.
For the small-sized equipment, HC, etc. shall be considered.



1. Concept of roadmap for meeting the Kigali Amendment (as a user)

There are three types of equipment i.e. the equipment for which **the technology for eliminating use of HFC is not available now**, the equipment for which such a technology is available, however, they are not mass-produced, and the equipment whose mass production has been started. (Precondition: Efficiency should be equal to or higher than that of HFC)

- a. **When mass production has been started, the available measures should be implemented as soon as possible.**
- b. **When the technology is available, the mass-produced equipment being available now shall be used with minimum cost until the mass production is started.**
- c. **When the technology is not available, the equipment with minimum filler content / leakage shall be selected while aiming at less than 15%.**
- d. **Existing HCFC. Drop-in etc. Minimum cost correspondence.**
If cost matches HFC-free mass-production equipment, it will convert.
- e. **Existing HFC. Drop-in etc. Minimum cost correspondence.**
If cost matches HFC-free mass-production equipment, it will convert.

2. Other concerns

- a. Regulation of production of Freon
- b. Forecast of the demands for Freon
- c. Balance of Freon's supply and demand / Price control
- d. Self-procurement of Freon



ATMO
sphere

Thank you very much!