



THE DIRTY DOZEN:

How your local supermarket
is killing the climate



ABOUT EIA

The Environmental Investigation Agency (EIA) is an independent campaigning organization committed to bringing about the change that protects the natural world from environmental crime and abuse. As part of our work, we have undertaken groundbreaking investigations into the illegal trade in ozone depleting substances (ODS) and have been closely involved in the international ozone and climate negotiations for well over a decade.

ACKNOWLEDGEMENTS

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INTRODUCTION

Supermarkets in the United States emit large amounts of potent greenhouse gases known as HFCs (hydrofluorocarbons), which are widely used in commercial refrigeration and air-conditioning.

A dozen of the largest and most important US supermarket chains and retailers were surveyed by the Environmental Investigation Agency (EIA) to ascertain what policies and actions were being taken both to reduce the amount of HFC emissions leaking from refrigeration units and what measures were underway to begin phasing out the use of HFCs.

The results from these "Dirty Dozen" are not only disappointing but also shocking. A majority of the US retailers surveyed are members of the Consumer Goods Forum (CGF), an international network of the world's largest retailers, which in 2010 committed to begin phasing out HFCs starting in 2015. This would mean all new store builds and refurbished stores would use non-HFC refrigeration.

Despite that commitment, none of the stores surveyed, including Walmart, the world's largest retailer and a member of the Board of Directors of the CGF, have a clear and comprehensive policy to begin phasing out HFCs in 2015, nor have they enacted state of the art maintenance and operation plans to significantly reduce HFC emissions. Supermarkets typically have leak rates of 25% per year or more, but proper leak detection and maintenance can reduce this rate to less than 10%. This would result in total emission reductions of millions of tons of carbon dioxide equivalent a year.

Since the Board of the CGF adopted the HFC policy in November 2010, Walmart alone has built over 300 new stores in the U.S., but has not opened a single store that is HFC-free despite the availability of this equipment in the US market. Although Walmart has stated that "We believe our role as the world's largest retailer comes with a special responsibility to lead the way in protecting the environment," it has not adopted an HFC policy that reflects the CGF commitment to begin phasing out HFCs in 2015. Neither have any of the other 11 supermarket retailers surveyed.

Walmart and all US retailers have fallen far behind the efforts of Canadian, European, and Japanese supermarkets in taking action to phase-out HFCs and significantly reduce these massive greenhouse gas emissions. The Canadian supermarket company Sobeys has installed HFC-free refrigeration in 36 stores – more than all US retailers combined.

Several European and Japanese retailers including Waitrose, Sainsbury's, the Swiss Coop, and AEON, with a combined total of over 4,000 stores, all have committed to a total phase out of HFCs and are currently building HFC-free stores. All of the US retailers EIA surveyed have yet to make such a commitment, which would support the mainstreaming of the HFC-free refrigeration technologies, and eliminate up to 40% of US HFC emissions.

President Obama has announced plans to begin regulatory measures to phase-out the most potent HFCs. EIA urges all US retailers to demonstrate leadership and support the President's Climate Action Plan by enacting a comprehensive HFC policy requiring all new stores and retrofits of existing equipment install HFC-free technologies from January 1, 2015 forward.

Will Walmart and the rest of the "Dirty Dozen" retailers take action to prevent HFCs from further damaging the global climate and by extension the communities that patronize their stores?

EIA will continue to report on developments by US retailers take action to eliminate HFCs.

WHAT ARE HFCs?

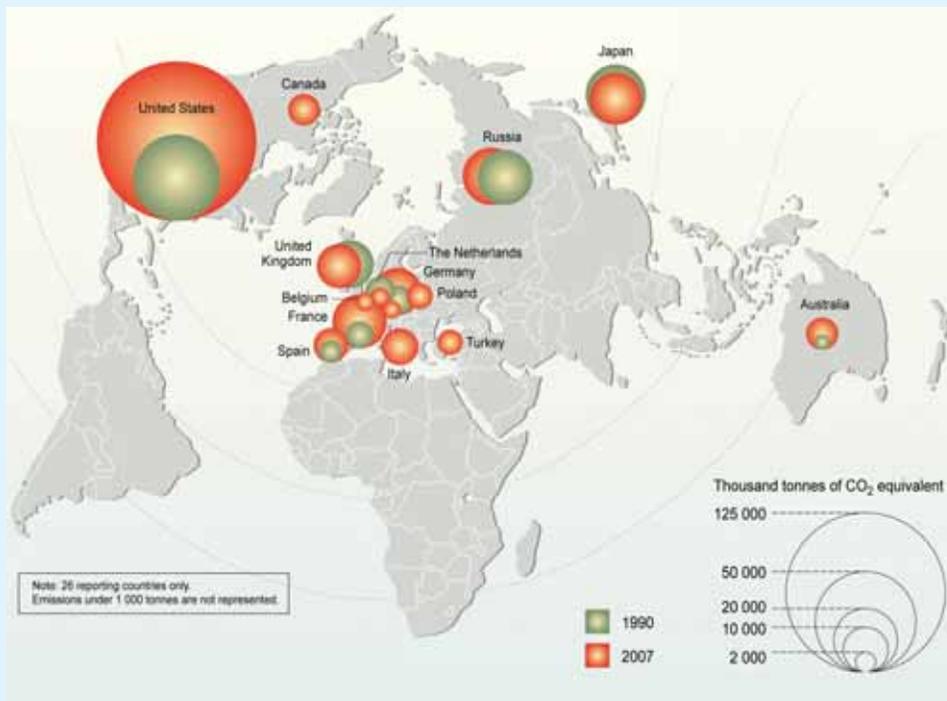
Hydrofluorocarbons (HFCs) are super greenhouse gases (GHGs) with global warming potentials (GWP) hundreds and thousands of times more powerful than carbon dioxide (CO₂).¹ These super greenhouse gases were commercialized to replace ozone depleting chemicals, e.g., CFCs and HCFCs, which are being phased-out under the Montreal Protocol. HFCs are primarily used in refrigeration, air conditioning, and foam blowing. However, climate-friendly alternative refrigerants and technologies are available, and others are being developed for most of these uses, all of which means that HFCs can be phased-out over time.² Although HFCs currently represent around 1% of global greenhouse gas emissions and 2% of emissions in the United States, emissions of HFCs are increasing faster than all other greenhouse gases.³ Unless action is taken now, global HFC emissions could reach 5.5-8.8 billion tonnes (gigatonne) of carbon dioxide equivalent (GtCO₂e) per year in 2050, equal to 9–19% of projected global CO₂ emissions under a business-as-usual scenario.⁴

ACTIONS TO PHASE-OUT HFCs

Action is occurring worldwide to phase-down HFCs through legislation and regulation. Internationally, proposals to amend the Montreal Protocol—the international treaty to protect the ozone layer—to regulate production and use of HFCs have been filed every year since 2009 jointly by the United States, Canada, and Mexico as well as by Micronesia.⁵ The Montreal Protocol is the most cost-effective, efficient multilateral treaty available to deal with HFCs. Every country in the world is a member of the Montreal Protocol and the necessary financial and technical mechanisms are already in place to phase-out HFCs. The Montreal Protocol has been highly successful in phasing out 97% of the chemicals that damage the ozone layer. Over 110 countries support the amending the Montreal Protocol to allow it to similarly phase-down the use of HFCs in the exact same industrial sectors that used ozone depleting substances. Additional countries such as China, which previously opposed these Amendments,

HFC EMISSIONS FOR SELECTED COUNTRIES

Source: UNFCCC, 2009; basemap: Atelier de cartographie de Sciences Po
http://www.grida.no/graphicslib/detail/hfc-emissions-for-selected-countries_atb0#



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ABOVE:

President Barack Obama and other world leaders agreed to use the resources of the Montreal Protocol to get rid of HFCs during the G20 Summit in Saint Petersburg, Russia, Sept. 5, 2013.

have agreed to formally discuss the amendments this year, following an agreement between Presidents Obama and Xi.⁶

In addition to multilateral advances to phase-down HFCs, the European Union, Japan, and Australia have moved to regulate HFCs domestically. In the European Union, the European parliament has proposed legislation to amend its F-gas Regulations to not only phase-down HFCs but also put in place bans on the use of HFCs in certain sectors, such as commercial refrigeration.⁷ In Japan, an amendment to the Fluorocarbons Recovery and Destruction Act provides for a phase-down of all fluorinated gases, promotion of low-GWP equipment and products, and provisions for containment of HFCs.⁸ In Australia, a carbon price was put into effect in July of 2012 that covers emissions from HFCs.⁹ The carbon price, or levy, is meant to increase recycling, improve servicing, and move the industry to use lower GWP alternatives.¹⁰

Although there has not been formal legislation or regulation passed in the United States on eliminating HFCs, President Obama has stated that phasing down HFCs is a priority of the Administration. In his Climate Action Plan, President Obama “directed his Administration to purchase cleaner alternatives to HFCs whenever feasible and transition overtime to equipment that uses safer and more sustainable alternatives.”¹¹ In addition, the Environmental Protection Agency has

been tasked to remove some of the highest GWP HFCs from the market.¹² These actions will provide regulatory signals to the industry to move away from HFCs, while promoting further development and mainstreaming of HFC-free technologies in the US marketplace.

The world is moving away from HFCs. Governments are recognizing that commercially available alternatives are here now for many of the sectors that use HFCs, especially for commercial refrigeration, and are putting into place the regulatory frameworks to push the markets to transition out of HFCs faster. In response, one of the largest users of HFCs, supermarkets, are beginning to transition to HFC-free technologies. Supermarkets across Europe, Canada, Japan, China, Brazil, South Africa, and throughout the world are using HFC-free refrigerant systems. In the United States, however, supermarkets have fallen far behind in phasing-out HFCs, even though the technology is available throughout the country.

Industry groups have also begun to act and address their use of HFCs. The Consumer Goods Forum (CGF), an international network of more than 400 of the world’s largest retailers, has pledged to begin using HFC-free equipment in new store builds starting in 2015.¹³ As a follow up to this pledge, the CGF released its Activation Toolkit, which laid out steps for fulfilling the pledge.¹⁴ The first step listed by the CGF is for retailers to “make a public commitment to phase out HFC refrigerants in new installation from 2015.”¹⁵

Supermarkets in Japan, Europe, and Canada have confirmed their commitment to phase out HFCs on a company level and/or have begun implementation.¹⁶ For example, AEON, Japan’s largest supermarket retailer, committed in 2011 to phase out of all HFCs by 2030, and to introduce CO₂ refrigeration systems into 10% of all new stores in fiscal 2012, 15% in fiscal 2013, and 25% in fiscal 2014.¹⁷ From fiscal 2015 onwards, the company will install only HFC-free equipment in new installations. In Europe, retailers such as Waitrose have pledged to operate HFC-free in all stores by 2021, with one third of its stores already converted to HFC-free equipment to date.¹⁸ Other retailers such as Aldi Sud (only in Germany), Coop Norge, Coop Sverige,

Coop Schweiz, ICA, Migros, Sainsbury's, and Tesco have pledged to install only HFC-free systems from now on in all new and refurbished stores.¹⁹ These new stores will add to the over 2,000 stores in Europe that are already HFC-free and another 589 that are currently using hybrid systems.²⁰ In Canada, the retailer Sobeys has already installed 36 HFC-free systems and has pledged to use only natural refrigerants in all of its new full-service stores, with plans for another 22 stores to be completed in 2013.²¹ Unfortunately, no US retailer has publically announced its commitment to use HFC-free refrigeration in new store builds or in retrofits as called for in the Consumer Goods Forum pledge.

LEAKAGE: WHY SUPERMARKET'S ARE A HUGE EMITTER OF HFCs

In the United States, HFCs are the most common refrigerants used in supermarket refrigeration systems. These commercial refrigeration systems make up 32% of global HFC consumption.²² Additionally, it is estimated that HFC emissions from supermarket refrigeration equipment and associated loss of energy efficiency can account for almost 50% of a supermarket's total greenhouse gas emissions.²³ In the United States there are more than 37,000 supermarkets,²⁴ with refrigeration systems that on average use 3,500 pounds of HFCs. Leakage rates in supermarket refrigeration systems and associated piping amount on average to 25% of the refrigerant charge annually. This means that each supermarket is emitting on average 1,556 metric tons of CO₂ equivalent of HFCs a year just from leaks in their refrigeration units.²⁵ Each supermarket's leakage of HFCs is the equivalent annual emissions from more than 300 passenger cars.²⁶ These emissions occur because of the huge leakage rates in the stores that allows for more than 32 million pounds of refrigerant to be discharged each year in the United States, which is the equivalent climate damaging emissions of approximately 12 million cars.²⁷ But, there is good news. By switching the refrigeration system from HFCs to a natural refrigerant such as CO₂, a supermarket can reduce its carbon footprint by 25%.²⁸ If all supermarkets in the U.S. did this, HFC emissions in the U.S. could be cut by more than 40%.²⁹

AVAILABLE ALTERNATIVES

There are many natural alternatives to HFCs available in the marketplace, the most common being hydrocarbons, CO₂ and ammonia. All three gases can be used in commercial refrigeration, and are in operation right now in the United States, as well as around the world. While supermarkets do have to acquire new equipment to use natural refrigerants, the gases are generally cheaper than HFCs to use. CO₂ specifically being found to be 94% lower in cost than HFC refrigerants.³⁰ Using natural refrigerants is not only better for the global climate because they remove the HFCs being vented in the outdated systems, but are also generally more energy efficient with the systems seeing a 10-50% energy savings.³¹



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- **Hydrocarbons**, including isobutane, propane, and propylene, are less expensive than HFCs and have much lower GWPs. In commercial refrigeration systems, propane is the most commonly used hydrocarbon. For example, the grocery store chain H-E-B opened a supermarket in 2013 in Austin, Texas, that uses only propane and is expecting the system to achieve a 50% energy reduction compared to a typical store refrigeration load.³²

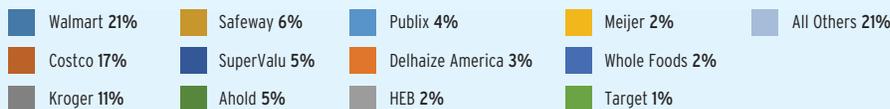


- **Carbon dioxide** is a colorless, odorless, non-flammable gas. Although CO₂ is the largest contributor to global greenhouse gas emissions, it offers a climate-friendly alternative in refrigeration because its global warming potential is 1 compared to common HFC refrigerants that are 2,000-4,000 times more damaging to the climate. The volumetric refrigeration capacity of CO₂ is much higher than that of conventional refrigerants, allowing for system designs with smaller volumes, which use less piping.³³ Although the ambient air temperature significantly impacts the energy efficiency of refrigeration systems using CO₂, in cooler climates the energy efficiency savings is beyond what is achievable using HFCs. AEON has reported to the Consumer Goods Forum that it is achieving 30% energy savings in all climates using a specially designed CO₂ transcritical refrigeration system. The two main systems used in supermarkets that use CO₂ as a refrigerant are transcritical systems which use the refrigerant both in the chilled and frozen food temperature cycles, and cascade systems, which use CO₂ inside the supermarket and ammonia or hydrocarbons outside or on the roof of the store.³⁴ Both of these systems have been used throughout the world, with over 1,000 systems installed in Europe alone.³⁵ In Canada, the supermarket chain Sobeys has installed 36 CO₂ transcritical systems and has achieved a 36% reduction in energy costs.³⁶ In the United States, Delhaize installed a CO₂ transcritical system at a Hannaford Store in Turner, Maine, in August 2013.³⁷

- **Ammonia** has many advantages, including a high thermodynamic efficiency and a GWP less than 1 compared to the 2,000-4,000 GWP of the HFCs now used in US supermarkets. Even though ammonia is toxic, when the appropriate safety precautions are applied, ammonia can be safely used as a refrigerant, and has been for more than 100 years. Many supermarket retailers use ammonia as the refrigerant of choice for warehouses and other larger distribution centers. Additionally, ammonia can be used in cascade systems, with CO₂ used inside the supermarket. SuperValu uses such a cascade refrigeration system in its Carpinteria, California, store, and is projected to see a 30% energy efficiency savings.³⁸

PERCENTAGE OF TOTAL SALES OF TOP US SUPERMARKETS

Source: Progressive Grocer, The Super 50 - Introduction / Methodology (May 2012)
<http://tinyurl.com/kyfg2oa>; Costco Wholesale, Forbes, <http://tinyurl.com/7tj4bxu>



“None of the US retailers have adopted a clear and comprehensive policy either to enact the CGF pledge or to minimize leakage.”

METHODOLOGY

In order to get a good overview of the supermarket industry in the United States, 11 of the largest supermarket chains were chosen as they make up more than 35% of the total number of stores in the industry and more than 68% of total sales.³⁹ In addition, Whole Foods was added to the list because of its focus on environmental sustainability.⁴⁰ The data on each retailer was collected using publically available information, specifically annual reports and sustainability reports, where available, and news stories. The information was then assembled and sent to each retailer with a letter asking for them to confirm or amend the validity of the data, and asking for any updates or additional information on that supermarket chain's HFC and environmental policies. More than half of the stores responded to the survey information confirming only that they had received the survey. Only Delhaize America responded to the survey synopsis with specific changes to ensure that its HFC and environmental policies were accurately reflected.

The stores were graded based on nine categories that fall under the four main themes of 1) HFC use and Policy, 2) Partnerships and Pledges, 3) Maintenance, and 4) Energy Efficiency. Each store could earn up to five points per category, for a total of 40 points.

SURVEY RESULTS: THE “DIRTY DOZEN”

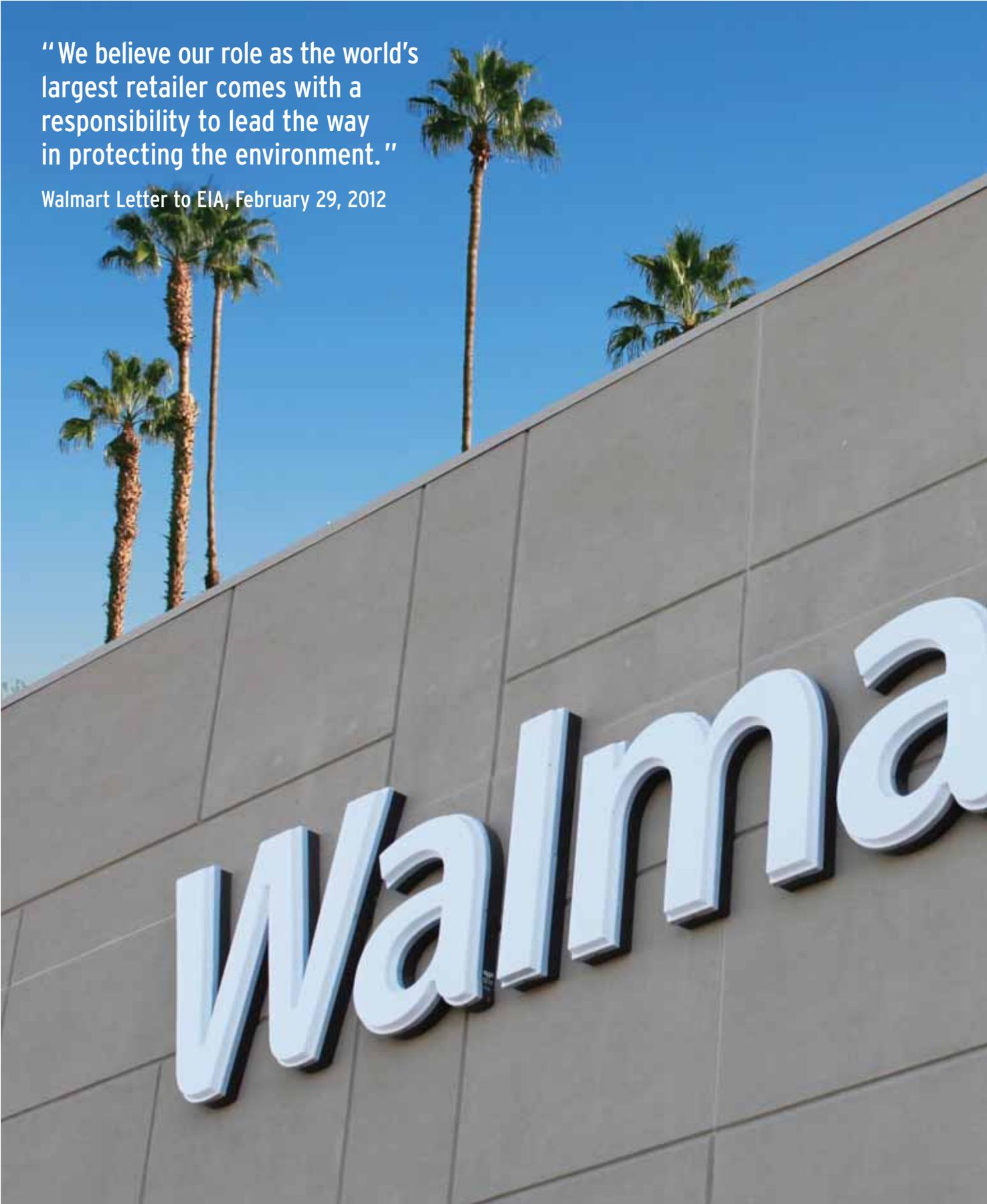
Overall, voluntary action has failed to move US supermarket chains and retailers to seriously address the large-scale emissions of climate damaging HFCs leaking from their refrigeration systems. US retailers, including Walmart, the world's largest and best-resourced retailer, have refused to take meaningful actions to begin phasing out HFCs or to significantly reduce their HFC emissions from refrigeration equipment.

Although over half of the retailers surveyed are members of the Consumer Goods Forum (CGF), which pledged to begin phasing out HFC refrigeration starting in 2015, none of the US retailers have adopted a clear and comprehensive policy either to enact the CGF pledge or to minimize leakage and venting from their refrigeration equipment. Delhaize America is discussing a company-wide HFC policy that is encouraging, but no new policy has yet been announced.

The contrast in preparation to meet the CGF commitment to begin phasing-out HFC use in 2015 between US supermarket chains and retailers and those in Europe, Japan, and Canada is both surprising and disappointing. Although Walmart boasted of the company's use of a new secondary loop system that would reduce greenhouse gas emissions by 95%, it has installed the new system in only 25 of its 4,625 stores in the U.S.⁴¹ This system still uses HFCs as the primary refrigerant.

“ We believe our role as the world’s largest retailer comes with a responsibility to lead the way in protecting the environment. ”

Walmart Letter to EIA, February 29, 2012

A photograph of a Walmart store facade. The word "Walmart" is mounted on the wall in large, white, three-dimensional letters. The building is a light grey color. In the background, several tall palm trees are visible against a clear blue sky.

walmart



WALMART FUMBLES

Walmart is the largest grocery retailer in the world with nearly 11,000 stores under 69 banners in 27 countries. Despite opening 146 stores in the U.S. in 2012 alone, Walmart has not built a single store using HFC-free refrigeration almost three years after its CEO, Mike Duke, a member of the Board of the Consumer Goods Forum (CGF), signed CGF's pledge to begin phasing out HFCs in 2015.

Since that pledge, EIA has repeatedly urged CGF members to take more rapid action against HFCs to protect the global climate, and many other CGF members have already begun building or retrofitting HFC-free stores.

In 2011, Walmart stated that it "is currently executing a global strategy to address harmful refrigerants, and develop and incorporate the latest innovations and technologies in effective, energy efficient, environmentally responsible refrigeration solutions," and had identified changes in "case display equipment, plant equipment, design and installation practices, and research and development projects."⁴³ Since this announcement, there has been no public statement on their global strategy to address harmful refrigerants, such as HFCs.

Walmart also recognized in a 2012 letter to EIA that it had "an opportunity to set the industry standard in GHG reduction" [by taking action on HFC refrigeration], as HFC emissions account for 13% of its total greenhouse gas footprint.⁴⁴ Walmart is using a secondary loop refrigeration system that combines either carbon dioxide or glycol and HFCs in more than 125 stores and two Sam's Clubs in the U.S., but these systems still use HFC refrigerants that are thousands of times more potent to the climate than carbon dioxide and only represent less than 3% of its US stores and approximately 1% of its total stores.⁴⁵

Although Walmart has made commitments to eliminate HFCs in its stores and publicly stated it will transition towards natural refrigerants,⁴⁶ it has yet to issue a clear and comprehensive corporate policy describing how and when it will begin using HFC-free technologies in its new store builds. Neither has Walmart established a state of the art maintenance and operations program to reduce refrigerant leakage of HFCs and other refrigerants in its stores. Walmart's UK chain called ASDA has reduced leakage rates from 20% to 7.1% since 2005 by employing comprehensive maintenance of its refrigeration systems.⁴⁷ Walmart can dramatically reduce leakage rates here in the U.S. employing the same practices, and doing so would prevent emissions of roughly 3.2 million tons of CO₂e, which is the same as annual greenhouse gas emissions from over 600,000 cars.⁴⁸

Walmart's lack of leadership in committing to phasing out HFCs undercuts the CGF efforts to begin phasing out HFCs in 2015 and also undermines efforts to mainstream the alternative HFC-free refrigeration technologies that are available in the United States. Walmart, as the CGF's biggest and richest retailer, should lead the CGF effort to phase out HFCs, and set the standard for other CGF members to follow.

“The leakage from all US refrigeration systems is more than the emissions from the annual electricity use of nearly 8 million households.”

There are some high points in the survey, with some new stores with natural refrigerant systems being built by Whole Foods, H-E-B, and Delhaize America, and an across the board use of alternatives in distribution centers and manufacturing plants by Safeway. Other highlights include SuperValu retrofitting a store with an ammonia/CO₂ cascade system. Additionally, all retailers surveyed have installed at least one ammonia system in a distribution center or manufacturing plant, with Walmart having installed the most at 35, and Whole Foods at the bottom of the list with 1.

In addition, Ahold, Delhaize America, Publix, SuperValu, Target, Walmart, and Whole Foods are piloting hybrid technologies, including those that incorporate CO₂ into the systems, but these stores do not represent a trend toward increasing the use of HFC-free systems.

Ahold, Delhaize America, Kroger, H-E-B, Publix, Safeway, Walmart, and Whole Foods have established a program to reduce leakage rates and fugitive emissions. Kroger and Whole Foods have reported tracking and reporting systems that have achieved leak reductions of 10% and 17%, respectively. Costco, Meijer, and SuperValu do not have any public information on maintenance programs or other efforts to reduce leakage rates.

While it is laudable that some of these companies have taken some action to reduce HFC emissions, the handful of stores that have installed HFC-free systems, including new builds, retrofits, and those using hybrid systems, represent

just one tenth of 1% of all stores from the 12 companies that we surveyed. This pales in comparison to the over 2,000 in Europe that use only natural refrigerants.⁴²

Overall, Costco and Meijer are at the bottom of the list, each scoring less than 10 points. These companies have yet to build, retrofit, pilot, or trial any HFC-free system, or even make any public statement on plans to phase-out the use of HFCs as refrigerants or to control leakage.

The only store to earn more than 50% of the available points was Delhaize, the owners of the Hannaford, Sweetbay, Bottom Dollar, and Food Lion brands, which scored a 23/40, or 58%. Surprisingly, Whole Foods, despite its stated commitment to sustainability only received 15/40 points, or 38%.

Not a single store received a passing grade, illustrating once again that U.S. supermarkets are ignoring the significant greenhouse gas emissions, as the leakage from all US refrigeration systems is more than the emissions from the annual electricity use of nearly 8 million households.

President Obama’s Climate Action Plan mandates the Environmental Protection Agency to review the use of the highest GWP HFC in commercial refrigeration and other sectors with a view to phasing out the most damaging chemicals. Although this will spur action by U.S. retailers, EIA will continue to urge all US retailers to enact comprehensive HFC policies that maximize climate benefits by phasing out use of HFCs and rapidly reducing emissions.



CONCLUSIONS

Voluntary measures have to date not succeeded in persuading US supermarket chains and retailers with supermarkets to begin phasing out of HFC refrigeration technologies. Instead, US supermarkets continue to use outdated and climate damaging technologies, falling farther and farther behind their worldwide competitors. Even though voluntary commitments to eliminate HFCs have been pledged through the Consumer Goods Forum, US companies have failed to take meaningful steps towards fulfilling that pledge. Regulatory action by the Obama Administration and the Environmental Protection Agency is urgently needed to require supermarkets to take prompt action to reduce their large scale HFC emissions.



A CO₂ transcritical refrigeration system.

© <http://www.hillphoenix.com>

EIA RECOMMENDS:

1. US retailers should publicly commit to eliminate the use of HFCs in all new store builds now, and produce a plan with clear time frames to retrofit existing stores with HFC-free technologies.
2. US retailers should establish a companywide maintenance program that requires significant reductions in leakage in all supermarkets, establish a policy to install doors on refrigerators and freezers, and adopt other proven energy saving measures within a specified time period.
3. That the Board of the Consumer Goods Forum and its Steering Committee give priority to promoting member companies to commit to using only HFC-free refrigeration in new store builds and refurbishments from January 1st, 2015 and to enact companywide policies to significantly reduce HFC emissions from existing refrigeration.
4. The U.S. Environmental Protection Agency (EPA) must promulgate regulations for all supermarkets and retailers to enact comprehensive measures to significantly reduce leakage rates of HFCs and other fluorinated refrigerants.
5. The EPA should promptly eliminate the most harmful HFCs with the highest global warming potential (GWP) for use in commercial refrigeration in supermarkets as part of President Obama's Climate Action Plan.
6. An amendment to the Montreal Protocol must be passed to phase-out HFCs and create a mandatory transition to HFC-free technologies, as voluntary measures have not worked.



© istock

SUPERMARKET MATRIX

	AHOLD USA	COSTCO	DELHAIZE	HEB	KROGER
HFC USE AND POLICY The retailer publicly committed to a total phase-out of HFC refrigeration on a fixed timetable	No corporate policy in the public domain committing to a phase-out of HFCs.	No corporate policy in the public domain committing to a phase-out of HFCs.	Delhaize America does not have a corporate policy on HFC free technology, but the company has made statements that they are discussing a plan internally and they will have some additional HFC-free stores by 2015. They hope to make CO ₂ transcritical systems their standard in their northeastern US Hannaford stores. ⁵⁸	No corporate policy in the public domain committing to a phase-out of HFCs.	No corporate policy in the public domain committing to a phase-out of HFCs.
	0	0	1	0	0
The retailer has opened or is planning to open new or retrofitted HFC-free stores	Ahold USA has neither installed nor made public plans to install HFC-free refrigeration systems in any of its stores. ⁵⁹	Costco has neither installed nor made public plans to install HFC-free refrigeration systems in any of its stores.	Delhaize America opened the first U.S. store to use a CO ₂ transcritical system at a Hannaford store in Maine. Additionally, they are entertaining a plan to have a retrofit HFC project operating by 2015. ⁵⁹	HEB opened a store in Texas, which uses an R290 hydrocarbon (propane) refrigeration system with a water cooled condenser unit and evaporator. The system is 50% more efficient than their typical store. ⁶⁰	Kroger has neither installed nor made public plans to install HFC-free refrigeration systems in any of its stores.
	0	0	2	1	0
The retailer is trialing HFC/natural refrigerant hybrid technologies that reduce HFC emissions	Ahold USA installed a CO ₂ /propylene glycol system with HFCs in a Giant store in Arlington, VA. By using this system, they reduced the carbon footprint of the store by over 172 metric tons of CO ₂ per year. ⁶¹ Ahold USA also installed a propylene glycol/HFC hybrid system at its Hartford, CT Stop & Shop, which reduced its HFC charge by 58% and at a Giant Food Store in Harrisburg, PA. ⁵⁰	Costco has neither installed nor made public plans to install hybrid refrigeration systems in any of its stores.	Delhaize America has three stores that operate with a low-temperature CO ₂ or as a cascade system which reduces the amount of HFCs used by up to 60%. ⁶²	HEB has neither installed nor made public plans to install hybrid refrigeration systems in any of its stores.	Kroger has neither installed nor made public plans to install hybrid refrigeration systems in any of its stores.
	2	0	2	0	0
The retailer has installed and have a policy for HFC-free systems in distribution centers and manufacturing plants	Ahold USA has four distribution centers using ammonia systems, two in Massachusetts, one in Connecticut and one in Pennsylvania, but does not have a HFC-free policy. ³¹	Costco uses ammonia refrigeration systems in 11 distribution centers across eight states, but does not have a HFC-free policy. ⁵⁶	Delhaize America uses ammonia in nine distribution centers and manufacturing facilities, but does not have a HFC-free policy. ⁶³	HEB has 15 distribution centers in Texas that use ammonia as refrigerant, but does not have a HFC-free policy. ⁶⁷	Kroger operates 16 distribution centers using ammonia refrigeration systems in 16 different states, but does not have a HFC-free policy. ⁷¹
	2	4	3	4	4
PARTNERSHIPS & PLEDGES The retailer is a member of the Consumer Goods Forum (CGF) and a part of the resolution to use HFC-free equipment in new stores by 2015	Ahold is a member of the CGF, on the Board of Directors, and is on the Sustainability Steering Committee. ⁵²	Costco is not a member of the CGF.	Delhaize is a member of the CGF, on the Board of Directors, and is on the Sustainability Steering Committee. ⁶²	HEB is a member of the CGF. ⁶⁸	Kroger is a member of the CGF, on the Board of Directors, and is on the Sustainability Steering Committee. ⁷²
	5	0	5	3	5
The retailer is an Environmental Protection Agency GreenChill Partnership member	Ahold is not a member of GreenChill. ⁵³	Costco is not a member of GreenChill.	Delhaize is a member of the GreenChill Partnership and has three certified stores, two Food Lion stores received gold certification and a Hannaford store in Maine received platinum. ⁶³	HEB is not a member of GreenChill.	Kroger is not a member of the GreenChill Partnership.*
	0	0	2	0	0
MAINTENANCE The retailer has established a company-wide maintenance program designed to reduce refrigerant leakage or has increased maintenance to reduce leakage rates	By the end of 2012, Ahold USA installed refrigerant leakage monitoring systems in 441 stores, with plans for another 111 by year's end. ⁵⁴	Costco does not have a publicly available refrigeration maintenance program designed to reduce and prevent fugitive emissions from its refrigeration systems.	Delhaize America uses state-of-the-art management practices to reduce refrigerant leakage. It is because of these programs that the mass of refrigerant leaking per square foot has been gradually declining since they started measuring it in 2006. ⁶⁴	HEB uses infrared diagnostic equipment to test and repair air leaks in the seals of the refrigeration units. ⁶⁹	Kroger has a tracking and reporting system in place for fugitive emissions from its refrigeration systems and has achieved a 10.6% reduction in fugitive emissions. ⁷³
	3	0	3	2	3
ENERGY EFFICIENCY The retailer has a policy to improve refrigeration energy efficiency and/or is implementing improved efficiency programs	Ahold USA is reducing energy use from its refrigeration system by installing electronic commutated motor fans and energy efficient lighting including LEDs in 179 stores. ⁵⁵	Costco has upgraded refrigeration controls to reduce energy consumption, but provides no information about other technologies like glass doors, night covers, or LED lighting. ⁵⁷	Delhaize America is continuing to install LED lighting and putting doors on refrigerated cases. It's Food Lion brand retrofitted 108 more stores with doors on medium temperature cases, 305 more stores with LED lamps, and strip curtains in coolers and freezers in 200 stores. ⁶⁵	HEB has installed 215 night blinds on open refrigerators. Also, all of HEB's stores shutdown lighting in refrigerated cases at closing and several stores have installed energy efficient fans in its refrigerated spaces. ⁷⁰	Kroger has installed LED lighting in refrigerated cases and distributed refrigeration and refrigeration control systems in most of its stores, but there is no public information regarding night covers, doors, or other efficiency technology. ⁷⁴
	2	1	4	3	2
POINT TOTAL	14	5	22	13	14

* Kroger recently bought Harris Teeter, which is a member of the GreenChill and has gold certified stores.⁶⁶

** A portion of Supervalu was recently bought by Cerberus Capital Management and 877 stores are now no longer under the Supervalu company, which could impact its standing as one of the countries largest retailers.⁶⁸

MEIJER	PUBLIX	SAFEWAY	SUPERVALU**	TARGET	WALMART	WHOLE FOODS
No corporate policy in the public domain committing to a phase-out of HFCs.	No corporate policy in the public domain committing to a phase-out of HFCs.	No corporate policy in the public domain committing to a phase-out of HFCs.	No corporate policy in the public domain committing to a phase-out of HFCs.	No corporate policy in the public domain committing to a phase-out of HFCs.	No corporate policy in the public domain committing to a phase-out of HFCs.	No corporate policy in the public domain committing to a phase-out of HFCs.
0	0	0	0	0	0	0
Meijer has neither installed nor made public plans to install HFC-free refrigeration systems in any of its stores.	Publix has neither installed nor made public plans to install HFC-free refrigeration systems in any of its stores.	Safeway has neither installed nor made public plans to install HFC-free refrigeration systems in any of its stores.	Supervalu's retrofitted an Albertsons in California in 2012 with an ammonia/CO ₂ cascade refrigeration system and shows 13-30% gains in energy efficiency compared to a conventional system. ⁸⁹	Target has not formally announced plans for an HFC-free store, but it has expressed interest in piloting a CO ₂ transcritical system.	Walmart has neither installed nor made public plans to install HFC-free refrigeration systems in any of its stores.	Whole Foods is opening in late 2013 an HFC-free store using a CO ₂ transcritical refrigeration system in Brooklyn, New York. ¹⁰⁴
0	0	0	1	0	0	1
Meijer has neither installed nor made public plans to install hybrid refrigeration systems in any of its stores.	Publix has 13 stores that have installed either medium-temperature secondary loop, medium temperature and low temperature secondary loop, or medium temperature glycol refrigeration systems along with an HFC system. They have also installed a HFC/CO ₂ low temperature system in Georgia and have additional stores in the works. But, they do not have a public policy to only install hybrid technologies or HFC-free technologies. ⁹³	Safeway has neither installed nor made public plans to install hybrid refrigeration systems in any of its stores.	Supervalu's Star Market in Massachusetts uses a secondary-loop system with a water/propylene glycol mix as its secondary refrigerant. The system uses 80-90% less HFC refrigerant than a traditional DX system and has a maximum leakage potential of 2%. ⁹⁰	Target is piloting CO ₂ /glycol/HFC hybrid technologies in four stores, one in San Clemente, CA where the system has 65% less climate impact, one in Minnesota which has 40% less climate impact, and one in Los Angeles, CA and Conyers, GA. ⁹⁵	As of 2012, more than 125 stores and two Sam Clubs in the U.S. utilized hybrid systems containing glycol or CO ₂ , along with HFCs. These efforts reduced refrigerant related emissions by 8% compared to 2005 levels. At a Sam's Club in Georgia, a HFC/CO ₂ hybrid system was installed resulting in a 34% HFC charge reduction. A Walmart in Colorado installed a hydrocarbon/glycol/HFC system and is trialing propane based freezer cases. ⁹⁵	Whole Foods installed a HFC with secondary CO ₂ system in 2009 and two HFC/CO ₂ cascade systems in 2010 in California and Massachusetts. ¹⁰⁵
0	3	0	1	2	4	2
Meijer uses an ammonia refrigeration system in a distribution center in Indiana, Michigan, Ohio, and Wisconsin, but does not have a HFC-free policy. ⁷⁵	Publix has two distribution centers that use ammonia refrigeration systems, one in Florida and one in Georgia, but does not have a HFC-free policy. ⁸⁰	All of Safeway's 18 distribution centers and manufacturing plants use HFC-free ammonia refrigeration systems. ⁸⁵	Supervalu uses ammonia refrigeration systems in 15 distribution centers and manufacturing plants in 12 states, but does not have a HFC-free policy. ⁹⁰	Target has installed an ammonia refrigeration system in distribution centers and manufacturing plants in Arizona, Iowa, Florida, and Texas, but does not have a HFC-free policy. ⁹⁶	Walmart uses HFC-free, ammonia refrigeration systems in 40 distribution centers and manufacturing plants in 28 states, but does not have a HFC-free policy. ¹⁰⁰	Whole foods has one ammonia refrigeration distribution center in Texas, but does not have a HFC-free policy. ¹⁰⁶
2	2	5	4	2	4	1
Meijer is a member of the CGF. ⁷⁶	Publix is a member of the CGF. ⁸¹	Safeway is a member of the CGF. ⁸⁶	Supervalu is a member of the CGF. ⁹²	Target is not a member of the CGF.	WalMart is a member of the CGF, on the Board of Directors, and is on the Sustainability Steering Committee. ¹⁰¹	Whole Foods is not a member of the CGF.
3	3	3	3	0	5	0
Meijer is a member of the GreenChill Partnership, but does not currently have any certified stores. ⁷⁷	Publix is a member of the GreenChill Partnership and has ten locations in Florida and two in Georgia that are silver certified. ⁸²	Safeway is not a member of GreenChill.	Supervalu is a member of the GreenChill Partnership and was recognized by the EPA as GreenChill Supermarket Partner of the Year. Their Miki's Farm Fresh Market in California received a silver certification award. ⁹³	Target is a member of the GreenChill Partnership and has two gold certified stores in California. ⁹⁷	Walmart is not a member of the GreenChill Partnership.	Whole foods is a member of the GreenChill Partnership and has eight silver and six gold certified stores in Arizona, California, Connecticut, New York, and Texas. ¹⁰⁷
1	3	0	2	2	0	3
Meijer does not have a publicly available refrigeration maintenance program designed to reduce and prevent fugitive emissions from its refrigeration systems.	Publix has initiated a refrigeration management plan based on zero-leak tolerance. They have invested in technology and maintenance which has resulted in further leak reductions. ⁸³	Safeway has a publicly available Refrigerant Compliance Plan designed to, among other priorities, report, repair, and prevent leaks. Due to a violation in 2013 of the Clean Air Act, Safeway signed a consent order with the EPA that will require them to reduce their leak rate to 18% by 2015. ⁸⁷	Supervalu does not have a publicly available refrigeration maintenance program designed to reduce and prevent fugitive emissions from its refrigeration systems.	Target joined the GreenChill partnership to reduce its refrigerant emissions, but does not mention a specific leak management plan.	Initiated a refrigerant leak reduction program across domestic stores and clubs that will significantly reduce greenhouse gas releases from refrigeration systems. ¹⁰²	Whole Foods has a tracking and reporting system in place for refrigerant leaks and achieved a 17% leak reduction in 2011. ¹⁰⁸
0	3	2	0	1	3	4
Meijer is installing glass doors on many of its refrigerated cases to reduce energy consumption. They are also developing a refrigerant system recommissioning program to replace older systems, which includes installing more efficient cases with glass doors. ⁷⁸	Publix has installed motion sensors on refrigerated cases, night shades, energy efficient case doors, and LED and metal halide lighting. Over 650 stores have LED lighting and motion sensors, saving nearly 100,000 kWh annually per store. They also installed more than 41,000 fixtures using LED technology in walk-in coolers and freezers. ⁸⁴	Safeway focuses on using energy efficient fans, and LED lighting in its refrigeration units. Some of its stores also feature "no heat" frozen food doors. The stores also collect real-time data to monitor and reduce energy consumption of refrigeration, lighting, and other systems. ⁸⁸	Supervalu's focus on refrigeration energy efficiency includes using LED lighting, installing night covers on open refrigerated cases, and efficient cooler spacing in many of its stores. ⁹⁴	Target is installing LED lighting in open refrigeration units and is piloting a program to put glass doors on medium-temperature refrigerated cases. Target has also implemented an automated fault detection diagnostic system that continuously monitors the store's systems. ⁹⁸	Throughout the US, Walmart installed LED lighting in its low and medium temperature refrigerated cases. Internationally, but not domestically, Walmart is also in the process of eliminating open freezers. ¹⁰³	Whole Foods has a program to reduce energy use from its refrigeration by installing night curtains, energy efficient doors, triple-pane glass, and LED lighting in all refrigerated cases. ¹⁰⁹
2	4	2	3	3	1	4
8	18	12	14	10	17	15

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