

# Sustainable Refrigeration Summit

Connecting the Pieces for Supermarket Refrigeration Solutions



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**Sustainable  
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Council**

[nasrc.org](http://nasrc.org)



# Corporate Sustainability Trends

Tristam Coffin - effecterra



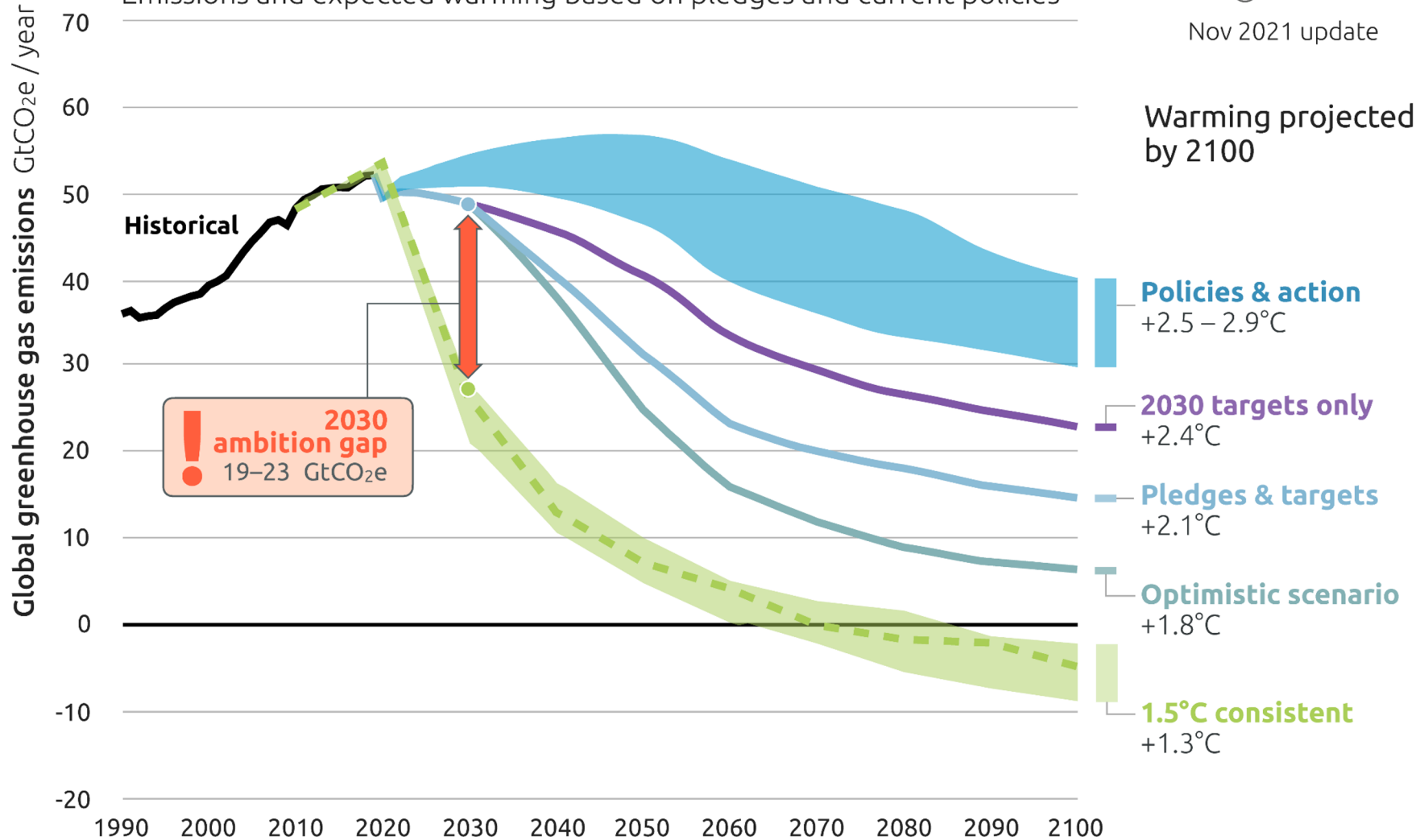
# The Global Challenge

## 2100 WARMING PROJECTIONS

Emissions and expected warming based on pledges and current policies

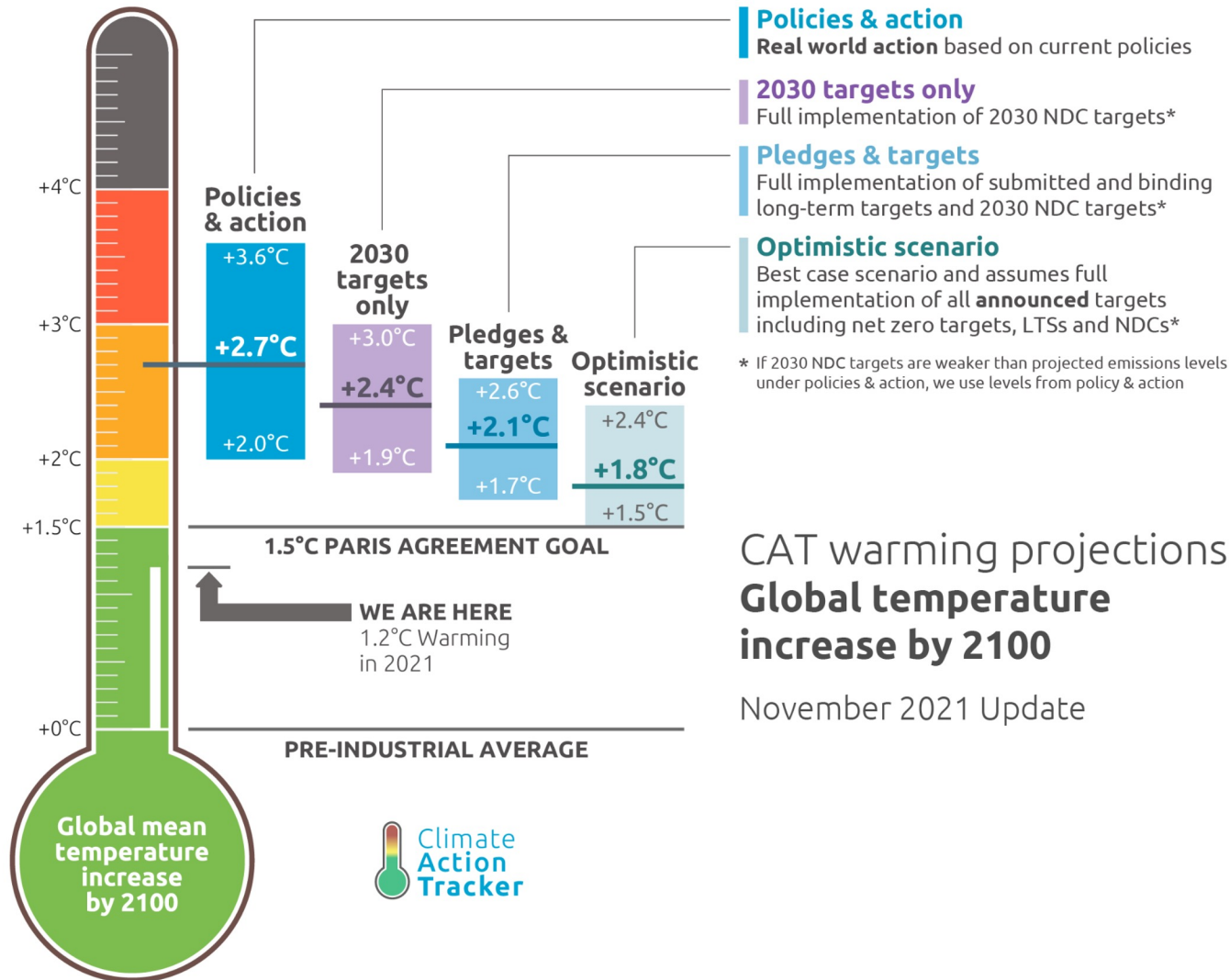


Nov 2021 update



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# The Global Challenge

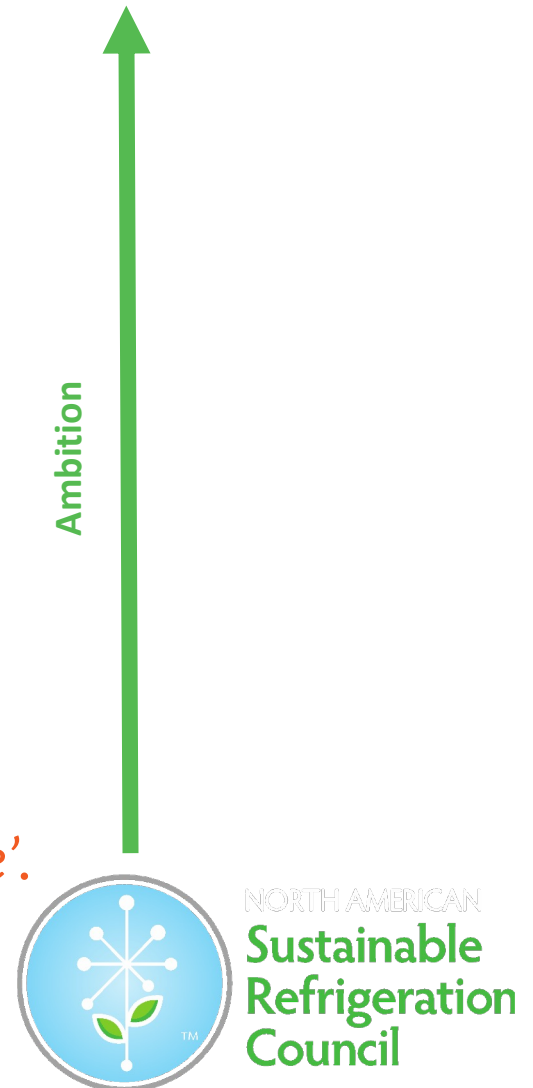


CAT warming projections  
**Global temperature increase by 2100**

November 2021 Update

# Neutral, Negative, Net-Zero?

- *Carbon negative - Impact is positive, Actively bettering the climate.*
- *Net zero - Impact is neutral, includes all GHGs, offsets are a last resort.*
- *Carbon neutral - Carbon only, balanced; not worse, nor better.*
- *Zero emissions - Suggests zero ongoing emissions, ignoring embedded.*
- *Low emissions - Less than business-as-usual. Confusing, to be avoided.*
- *Carbon/climate positive - Misleading marketing term. Should use 'negative'.*



# Operational vs. Embodied Carbon

**OPERATIONAL CARBON** is defined as the greenhouse gas emissions associated with the operational (mainly energy) use of a building.

*(This includes all carbon from energy required to heat and power the building, including but not limited to lighting, plug loads, heating and cooling, and cooking.)*

**EMBODIED CARBON** is defined as the greenhouse gas emissions associated with the raw material extraction, manufacturing and processing, transportation, and installation of all building materials.



# Carbon Transformation Frameworks

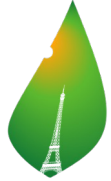


## Various frameworks exist.

- Treaties (Paris, Montreal)
- Initiatives (SBTi, Race to Zero)
- Built Environment (ILFI, GBC)
- Protocols (GHG Protocol)
- Financial (TCFD)
- Reporting (WEF, CDP, CDSB, GRI, IIRC and SASB)
- + more



# Pathway so far



PARIS2015  
UN CLIMATE CHANGE CONFERENCE  
COP21·CMP11

**Kyoto Protocol CMP11**  
keep Global Warming  
"to well below **2 degrees C**"



The Kigali Amendment to  
**Montreal Protocol**  
International agreement  
to phase-down of  
hydrofluorocarbons (HFCs)



**'AIM ACT'**  
The American Innovation & Manufacturing  
Act  
Directs EPA to address  
Hydrofluorocarbons



**'SEC RULES TO ENHANCE &  
STANDARDIZE CLIMATE RELATED  
DISCLOSURES'**

**'INFLATION REDUCTION ACT'**  
US RATIFIES KIGALI AMENDMENT

2015

2017

2018

2020

2021

2022

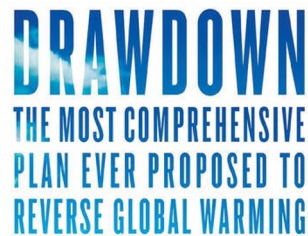
**SBTI LAUNCH**  
FOR AMBITIOUS  
CORPORATE  
CLIMATE ACTION  
Science-based emissions  
reduction targets

**'PROJECT DRAWDOWN' PUBLISHED**  
GLOBAL RESEARCH INITIATIVE  
The most substantive solutions  
to global warming

**IPCC SR15**  
Special Report on  
Global Warming  
of **1.5 degrees C**

**US ADMINISTRATION**  
'CLIMATE' NOW A CABINET POSITION

**US REJOINS**  
2015 'PARIS AGREEMENT'



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# Industry Trend: GHG Targets

## GHG Reductions Targets Are Now Expected

There has been a rise in quantifiable GHG reduction targets across sectors & industries.



More than **70 countries**, including the biggest polluters – China, the United States, and the European Union – have set a net-zero target, covering about **76% of global emissions**.

**3,821 companies** have committed to take action with **1,817** setting a Science-based Target, and **1,399** committing to net-zero.

There are currently **8296 companies**, **52 sub-national regions**, **1136 cities**, **1125 educational**, **593 financial**, and **64 healthcare institutions**, and **29 other organizations** in the Race to Zero - committed to halving emissions by 2030 and achieving net zero carbon emissions by 2050 at the latest.

At least **one fifth of the world's 2,000 largest public companies** have committed to meet **net zero targets**. The companies together represent sales of nearly **\$14 trillion**.



# Flagship Commitments

## Google

Google has committed to run its Data Centers and campuses including food services on 24/7 Carbon Free Energy by 2030. Electrification of space heating, domestic hot water, and cooking is critical to meeting this objective. Their offices at [6 Pancras Square London](#) became the first building in the world to meet a Zero Carbon certification.



## Amazon

Amazon has committed to [Net Zero Carbon by 2040 and using 100% renewable energy by 2025](#). Amazon recently acquired naming rights for Climate Pledge Arena home of the Kraken, NHL's newest franchise team. Climate Pledge Arena will be the first arena in the world to target [Zero Carbon Certification](#) and feature all-electric operations.



## Stanford University

Stanford has recently finished electrifying most of their campus of 12 million square feet. The [Stanford Energy System Innovation \(SESI\)](#) project replaced an aging natural-gas-fired co-generation plant with on- and off-campus photovoltaic power and advanced waste heat recovery systems. The University announced it will be use [100% renewable electricity beginning at the end of last year](#) and has made a commitment to become 80% Carbon Neutral by 2025 and "Zero Waste" by 2030.



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# Retail Commitments

## Target

By 2040, Target commits to net zero greenhouse gas emissions across the enterprise, 10 years ahead of the Paris Agreement. In the near term, its goal is to reduce absolute scope 1, 2 and 3\* greenhouse gas emissions by 30% below 2017 levels by 2030.

Aiming for 50% renewables by 2025 & 100% by 2030.



## Walmart

Walmart will hit zero emissions across global operations by 2040, without offsets.

They will reduce absolute global scopes 1 & 2 GHG emissions 35% by 2025 and 65% by 2030 from 2015 base year (approved as science-based and classified as 1.5°C-aligned, SBTi)

They will also power 50% of their global operations with renewable sources of energy by 2025 and 100% by 2035



## Kroger - NEW!

Kroger recently committed to set a more aggressive greenhouse gas (GHG) reduction target aligned with SBTi, including a new Scope 3 goal.

Current 2030 goal is aligned with a well-below 2°C climate scenario; however, the goal will be strengthened to support a 1.5°C climate scenario. *(detailed roadmap for achieving the current GHG reduction goal by the end of the 2022 fiscal year.)*



9 out of 10 of the largest grocery retailers in the UK specify Natural Refrigerants for new refrigeration systems



# GHG reduction pathways

- **ENERGY** - **clear path** to zero via renewables
- **LOGISTICS** - **clear path** to zero via electrification
- **HEATING/KITCHENS** - **clear path** to zero via electrification
- **REFRIGERANTS** - the **'Cinderella'** of the carbon equation

## Scope

2

1

3

1

1



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# Refrigerants; a triple threat

## 1. A significant climate lever.

- 90-200 gigatons of avoided greenhouse gases by 2030
- 3-6 gigatons per year, 7-15% of our annual carbon budget (40 gigatons per year) (1 gigaton of emissions is equivalent to ~80% of the cars on American roads)

## 2. Overlooked & under addressed.

- Typically ~30%+ of Scope 1&2 emissions in food retail real estate
- Kigali HFC phase down not enough to safely meet 1.5deg targets

## 3. An accelerating GHG emission

- HFCs are the fastest growing GHG emission per year (UNEP)
- 1 billion people already lack access to cooling to stay safe
- ~400 million heat pumps will enter the market to decarbonise heat <2030



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# Summary

- HFCs & HFOs will face stricter regulation
- We are seeing a Natural Refrigerant revival
- Retailers are setting ambitious climate goals
- HFC Refrigerants represent a triple-threat
- We already have viable solutions today!

# Thank you.

## Tristam Coffin

**Owner/Operator**

**Sustainability Leader**

**Passion:** Integrative carbon mitigation solutions for the built and business environment

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# effecterra

Urgent, Collaborative, Sustainable, Impact

