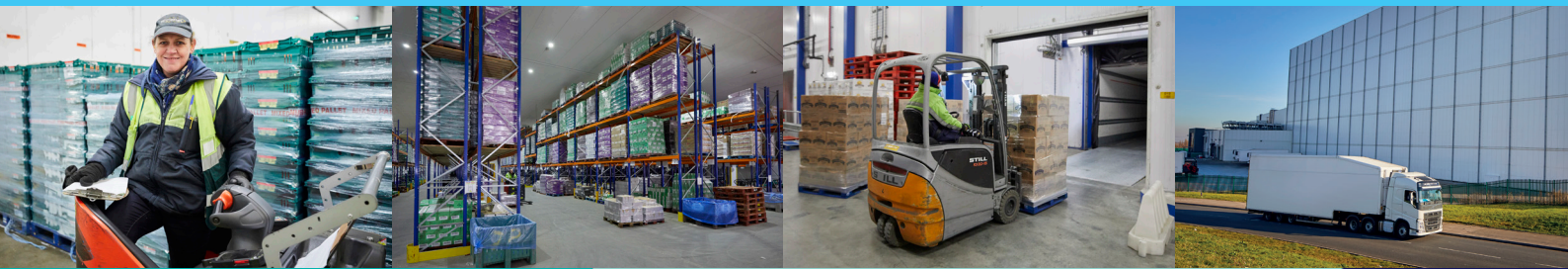


-18°C 0°F



SHAPING THE COLD CHAIN OF THE FUTURE:
THE ROAD TO NET ZERO

**PART FIVE – INCREASING TEMPERATURE
SET POINTS FOR FROZEN FOOD TO CUT
EMISSIONS ACROSS THE UK COLD CHAIN**



ABOUT THIS DOCUMENT /

AIM OF THIS DOCUMENT

Increasing Temperature Set Points for Frozen Food to Cut Emissions Across the UK Cold Chain provides an overview of the theory behind the global initiative to assess temperature set points for frozen food storage and how the UK cold chain could lead the way in reducing energy use and slashing emissions.

Although early signs are positive, there is much work still to be done to assess the impact of an increase, including the readiness of temperature-controlled logistics operators and the steps needed to transition to new set points.

This report is a call for action, it sets out the broad actions needed to progress the concept in the UK and how the Cold Chain Federation will work with our members and other stakeholders across the food supply chain to fully explore how we can all turn up the dial on frozen.

OUR NET ZERO PROJECT

Launched in 2020, our Net Zero Project aims to unite our industry, define what we mean by a net zero cold chain, and work together to identify, plan and transition to a more efficient and lower emission cold chain of the future. As part of the Project, we have released a series of documents to demonstrate how we can work together with the Government and other stakeholders to contribute to the UK's decarbonisation goals:

- **Part One:** Shaping the Cold Chain of the Future: The Road to Net Zero.
- **Part Two:** Defining a Net Zero Cold Chain.
- **Part Three:** The Journey Towards Emission Free Temperature-controlled Distribution on Road Vehicles.
- **Part Four:** The Cold Store of 2050.
- **Part Five:** Increasing Temperature Set Points for Frozen Food to Cut Emissions Across the UK Cold chain (this document).



ABOUT THE COLD CHAIN FEDERATION

We are the voice of the UK cold chain. Our approximately 300 members operate more than 450 specialist storage facilities and run more than 40,000 vehicles and refrigerated trailers across England, Wales, Scotland and Northern Ireland. Cold Chain Federation members operate within the UK and internationally.

The organisation can trace its history back to original formation in 1911. Formerly FSDF (Food Storage and Distribution Federation), we became Cold Chain Federation in 2019. Find out more www.coldchainfederation.org.uk

1 / INTRODUCTION /

Over the last year the concept of reducing the industry standard minimum temperature adhered to across the frozen food supply chain has received global attention, most notably during the COP28 conference in Dubai.

The broad theory is that most of the global frozen food supply chain (including within the UK) operates at a minimum temperature threshold of -18°C (or 0°F). This has been the standard for well over 100 years. However, evidence is growing that for most products this set point could be overly risk averse and that transitioning to a higher set point (for example -15°C) would not affect safety or overly impact food quality and could be an opportunity to significantly reduce energy use and associated emissions without the need for major legislative change or significant financial investment.

The report 'Three Degrees of Change', presented at COP28 and produced by the International Institute of Refrigeration and the Centre for Sustainable Cooling provides an excellent overview¹.

Although the early signs are promising, more research and collaboration is needed to fully assess the potential of a set point change and what the new temperature could be. Research needed includes a full review of UK legislative barriers, an analysis of individual product type challenges and an assessment of the temperature-controlled supply chain to ensure the whole cold chain can safely adapt without increasing food wastage or creating any other unintended impacts.

The Cold Chain Federation have been supporting our members who have begun to explore the potential of reviewing frozen food set points, most notably Nomad Foods and a consortium of global logistics companies led by DP World – however to fully assess and release the potential, a collaborative approach of businesses, associations, regulators and academics is required. This must include a thorough assessment of whether the wider cold chain system, which ensures products safely move from production to consumer, can support such a change.

Although the early signs are promising, more research and collaboration is needed to fully assess the potential of a set point change and what the new temperature could be.

2 / THE ROLE OF THE COLD CHAIN FEDERATION AND OUR MEMBERS /

The Cold Chain Federation is committed to working with our members to support the UK approach to revising temperature set points for frozen food. We will do this in three ways:

- ASSESS THE READINESS OF THE TEMPERATURE-CONTROLLED SUPPLY CHAIN FOR RAISING FROZEN FOOD SET POINTS**
 Work directly with our members and government officials to understand the practicalities of raising frozen temperature set points on the cold chain, including identifying risk points and collaborating with the wider frozen food sector to find solutions.
- SUPPORT FOOD MANUFACTURERS TO DETERMINE PRODUCT LEVEL OPPORTUNITY AND TO PLAN THEIR FUTURE SUPPLY CHAINS**
 Collaborate with frozen food manufacturers and industry groups to ensure the needs of the cold chain are factored into their research and deployment strategies.
- BACK ACADEMIC RESEARCH TO QUANTIFY THE EMISSIONS BENEFITS, EVALUATE REGULATORY BARRIERS AND VERIFY SYSTEM LEVEL IMPLEMENTATION**
 Facilitate and actively support government backed independent research from trusted UK institutions to verify research into higher set points

3 / SUSTAINABILITY – THE COLD CHAIN’S EXISTENTIAL CHALLENGE /

Raising frozen temperatures is not a new concept, but the complexity of implementing a change, especially across global supply chains, has been hard to overcome. However, the drive for sustainability and towards 'net zero cold chains' is changing the urgency.

Keeping products frozen requires a significant amount of energy and carbon. A recent study estimated that the UK food cold chain (which includes chilled and frozen products) consumes 29.1 TWh of energy (mainly electricity, but also diesel and gas), which equates to 12.9 MtCO₂e². With a projected growth of demand for frozen foods comes a potential increase in the energy consumption of the food system, if we are to reach net zero across the food system, we can no longer afford to use energy unnecessarily and so there is renewed interest in the concept of reducing frozen food temperature set points.



4 / WHAT CARBON AND ENERGY SAVINGS COULD A CHANGE IN FROZEN FOOD SET POINT ACHIEVE? /



Globally, the Three Degrees of Change³ report estimated that freezing food to -15°C instead of -18°C would reduce the energy consumption from the frozen food chain by 25 TWh/yr, with corresponding greenhouse gas emissions reductions of 17 Mt CO₂e/yr.

There is no accurate estimate of the potential energy and emissions savings from reducing the set point in the UK as the energy footprint of the frozen food supply chain has not yet been mapped.

However, using energy and carbon estimates for the whole food cold chain and applying some conservative assumptions for the proportion specific to the frozen food chain and Nomad Foods' conclusion that freezer energy could be reduced by 10% from a three-degree change, reductions to the UK's energy and carbon footprint could be broadly in the region of:

- A reduction of 0.3 TWh/yr in energy consumption, saving 0.13 MtCO₂e/yr.
- An estimated 0.1% reduction in emissions from the UK food system and a 0.1% reduction in UK electrical consumption.

These calculations are indicative only, a full and proper assessment is required not only to fully calculate the energy and emissions savings, but also to determine what the future temperature set point should be.

5 / WHAT DO THE REGULATIONS SAY? /



The exact regulatory pathway to reducing frozen temperature set points requires further research. Currently the only UK Regulation identified to specifically state -18°C as a legal minimum temperature are the Quick-frozen Foodstuffs Regulations – which only apply to a product if it is labelled 'Quick frozen'.

-18°C is also firmly engrained in global standards determining food safety control, such as the United Nations' Codex Alimentarius, from which the UK's food agencies usually adopt the recommendations.

Further research is required to understand the view of regulators and advisory committees in the UK and internationally to reviewing temperature set points, the time scales to changing long held standards and whether UK supply chains can shift to a higher set point without waiting for standards and guidelines to be formally reviewed.

6 / WHAT HAPPENS NEXT? /

The apparent lack of regulatory barriers coupled with the strong drive for sustainability provides the UK with a unique opportunity to lead to world in turning up the freezer dial.

Major UK and international frozen food manufacturers have begun to collect evidence of the impact of lower temperature set points on food safety and quality and whilst more work needs to be done, the early signs are positive. This will help identify a new 'target set point' and confirm which specific products can be kept at higher temperatures without compromising quality and safety.

Whilst product level assessments of safety and quality continue, there is a lot more to be done to ensure the network of cold stores and refrigerated vehicles which make up the bulk of the cold chain can implement a set point change. This cannot be done in isolation, businesses and regulators across the temperature-controlled supply chain must come together to plot the way forward. Key research needs include:

WIDER IMPACTS

- A comprehensive, evidenced review of the UK energy and GHG emission impacts which could result a change in frozen food temperature set point.
- Lifecycle analysis of frozen products through the cold chain, in order to better understand the energy consumption and associated emissions profile for different types of food and their supply chains.
- Independent real-world monitoring of food products as they pass through the cold chain to identify any potential risk points of a higher set point.

TECHNOLOGICAL CONSIDERATIONS

- An assessment of the UK's cold chain infrastructure, such as cold stores and transport refrigeration units, to assess their current and future compatibility to warmer frozen set points.

IMPLEMENTATION AND ROADMAP

- A thorough review of the contractual and operational factors which determine how temperatures are set in cold stores and refrigerated vehicles.
- Assessment of UK regulatory barriers to a set point change and how this could impact our trading relationships with global partners.
- Production of a road map for how, and at what pace, system wide temperature set point change could be adopted and when emissions reductions would be realised.
- A review of whether certain businesses, particularly SMEs, could be disadvantaged as an unintended consequence of a set point change.
- Better understanding of consumers' preferences and how they could be impacted by a set point change.

7 / OUR ACTION PLAN /

CAPTURING MEMBERS' VIEWS

We have launched a new member survey to capture member's views on turning up the dial on frozen food.

Feedback will be used to help us understand different views from across the Cold Chain Federation membership on the issue of raising temperature set points in the frozen food supply chain.

We are specifically looking for views on how set points are currently determined, opinions on how an increase could be implemented within temperature-controlled logistics operations and what the associated risks, or challenges, might be.

The results of this survey will be published during summer 2024.

The survey can be found on Cold Chain Federation's new webpage: <https://www.coldchainfederation.org.uk/frozen-food-set-points/>

SUPPORTING INITIATIVES ALREADY UNDERWAY

Continue to provide technical support and advice to food manufacturers and other businesses starting to look at how a set point change could work in their business.

RAISING AWARENESS WITHIN WESTMINSTER

Our recently published *Manifesto for the Cold Chain*, aimed at the next UK Government, including an objective to secure 'Government support for the cross-industry initiative to assess the potential for reviewing commonly held temperature set points for frozen food storage and distribution, which could significantly save energy without compromising product safety or quality.

The potential energy and emissions savings from a set point change is already forming part of our regular discussions with officials and elected members, but there is more to do. We will again be highlighting the potential at this year's Cold Chain Parliamentary Reception and building a network of supporters for the initiative to help us overcome regulatory and system challenges which arise in the coming months.

KEEPING YOU INFORMED

We are committed to keeping all members updated with the latest developments:

- We have launched a new webpage to provide links to research, case studies and updates as the initiative develops. <https://www.coldchainfederation.org.uk/frozen-food-set-points/>
- Regular updates through member emails, Cold Chain News and at Cold Chain Live!





FROZEN & CHILLED > STORAGE >
DISTRIBUTION > NETWORK

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