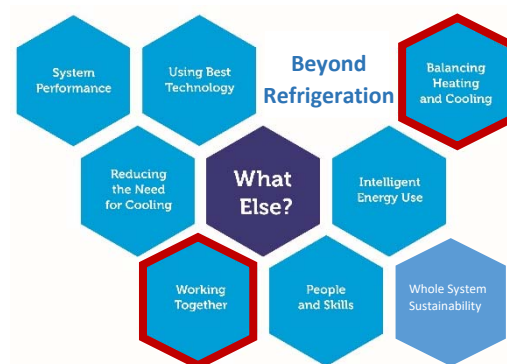


“ Strategies to support users of refrigeration, air conditioning and heat pump technologies to achieve carbon reduction through effective policy implementation, financial incentives, and emissions monitoring. ”

Objective is to provide policy makers with

- expert advice from Institute of Refrigeration professionals on effective solutions to aid the move to net zero
- the information needed to ensure that policy decisions take into account the interrelation of heating and cooling needs
- realistic and achievable opportunities, solutions, targets and goals for users in this sector
- the necessary depth of understanding of total life cycle and sustainable operation
- advice for non-technical specialists responsible for high level net zero strategies within BEIS & DEFRA / DFE.



## Background and Scope

- The Institute of Refrigeration (IOR) is the specialist professional engineering charity body for expert individuals working in this sector. It has a global reputation for independent technical advice and innovation. Its members provide services to users of cooling and heating services including manufacturing, supply, installation, service and maintenance, consultancy, and inspections
- Refrigeration, Air Conditioning and Heat Pump (RACHP) technologies are used to provide essential services in food production, distribution, storage and retail, industrial cooling processes in manufacturing, climate control in spaces, such as datacentres, IT rooms, offices, shops, leisure facilities and hospitality, as well as pharmaceutical and healthcare facilities, amongst others.
- Heating and cooling in the UK is estimated to account for 10Mt CO<sub>2</sub>e direct emissions from refrigerant use and 87Mt emissions from energy use to heat buildings.
- The sector is estimated to contribute to the UK economy through employment of around 70,000 people directly in manufacturing and service roles. It is estimated that the direct impact of cooling on the UK economy is £43Bn

## IOR Beyond Refrigeration Critical Issues and Ambitions

### 1. Reducing the Need for Mechanical Cooling and Heating

Our ambition is that policy should support businesses to consider mechanical refrigeration technology as a last resort instead of relying on “business and usual” purchasing and specification practices. This will mean the need to incentivise widespread adoption of net zero alternatives to mechanical cooling.

### 2. Achieving Best System Performance

Our ambition is that purchasers of new equipment and users of existing equipment should be supported to achieve the greatest possible reduction in energy demand and ongoing use without compromising reliability.

### 3. Balancing Heating and Cooling

Our ambition is that policy will support the use of opportunities currently available to maximise heat recovery, sharing and storage across different business activities using heating and cooling.

### 4. Making Use of Best Available Technology

Our ambition is that the whole sector will rapidly adopt the best available, closest to net zero heating and cooling options as dominant technologies.

### 5. Use Energy Intelligently

Our ambition is for 100% renewable energy and zero carbon energy systems providing maximised efficiency, flexibility, and support grid stability.

### 6. Developing the Best People and Skills

Our ambition is that everyone involved in cooling and heating systems purchasing, maintenance or operation, has adequate technical understanding and responsibility for championing net zero.

### 7. What else? Whole System Sustainability

Our ambition is that everyone involved in cooling and heating systems purchasing, maintenance or operation has adequate technical understanding and responsibility for championing net zero.

## Policy Brief 1 – Heating and Cooling

The IOR Environment Working Group has identified seven key areas for supporting the path to net zero ([www.ior.org.uk/beyondrefrigeration](http://www.ior.org.uk/beyondrefrigeration)). The ambition for **heating and cooling** is summarised here, together with proposed policy options to support the necessary change by users.

### 1. Reducing the Need for Mechanical Cooling and Heating

<p><i>Our ambition is that policy should support businesses to consider mechanical refrigeration technology as a last resort instead of relying on “business and usual” purchasing and specification practices. This will mean the need to incentivise widespread adoption of net zero alternatives to mechanical cooling.</i></p>	<p><b>Policy proposals</b></p> <ul style="list-style-type: none"> <li>✓ Require consideration of alternatives to mechanical cooling in all new buildings and building changes including statement of which alternatives have been considered and why they have been adopted or discounted</li> <li>✓ Fiscal incentives for sites where user adopts alternatives to mechanical cooling</li> <li>✓ Policies that lead to reduced demand for mechanical heating and cooling</li> </ul>	<p><b>Possible policy mechanisms</b></p> <ul style="list-style-type: none"> <li>✓ Building Control</li> <li>✓ Enhanced Capital Allowances</li> <li>✓ Part L Building Regulations</li> <li>✓ Heat and Buildings Strategy</li> </ul>
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### 2. Achieving Best System Performance

<p><i>Our ambition is that purchasers of new equipment and users of existing equipment should be supported to achieve the greatest possible reduction in energy demand and ongoing use without compromising reliability.</i></p>	<p><b>Policy proposals</b></p> <ul style="list-style-type: none"> <li>✓ Requirement for regular inspection and reporting on emissions for whole cooling system use for all applications (not just air conditioning)</li> <li>✓ To make it mandatory that energy improvement recommendations be made</li> <li>✓ Incentives to recognise and encourage continued reductions in system emissions and energy use</li> <li>✓ Ensure building owners take responsibility for efficiency of systems in rental/lease sites</li> </ul>	<p><b>Possible policy mechanisms</b></p> <ul style="list-style-type: none"> <li>✓ Energy Performance Inspections across all applications</li> <li>✓ Energy Performance of Buildings Directive</li> <li>✓ Display Energy Certificates</li> <li>✓ Enhanced Capital Allowances</li> <li>✓ Part L Building Regulations</li> <li>✓ Performance Based Policy Framework in Large Commercial and Industrial Buildings</li> </ul>
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### 3. Balancing Heating and Cooling

<p><i>Our ambition is that policy will support the use of opportunities currently available to maximise heat recovery, sharing and storage across different business activities using heating and cooling.</i></p>	<p><b>Policy proposals</b></p> <ul style="list-style-type: none"> <li>✓ Requiring connections between heating and cooling, ensuring trailblazer programmes delivers and are extended nationally</li> <li>✓ Provide legal framework to make it easier for organisations in a heat zone to share heating and cooling in a common system and mandate this where possible</li> <li>✓ Site owners to be required to provide evidence of consideration given to opportunities to share heating and cooling, for new and extension/change of plant</li> <li>✓ For existing sites regular inspections of whole cooling systems showing opportunities for balancing cooling and heating</li> </ul>	<p><b>Possible policy mechanisms</b></p> <ul style="list-style-type: none"> <li>✓ Heat Zoning and District Networks programme</li> <li>✓ Planning and Building Control</li> <li>✓ Energy Display Certificates</li> <li>✓ Energy Performance Inspections</li> <li>✓ Part L Building Regulations</li> <li>✓ Heat and Buildings Strategy</li> </ul>
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#### 4. Making Use of Best Available Technology

<p><i>Our ambition is that the whole sector will rapidly adopt the best available, closest to net zero heating and cooling options as dominant technologies.</i></p>	<p><b>Policy proposals</b></p> <ul style="list-style-type: none"> <li>✓ Need to clearly identify new technologies that offer lowest carbon solution and ensure they are effectively implemented</li> <li>✓ Commitment to highlight heating and cooling as a priority area for business incentive funds</li> <li>✓ Mandate replacement of older technologies with new more efficient low carbon technologies supported by financial incentives</li> </ul>	<p><b>Possible policy mechanisms</b></p> <ul style="list-style-type: none"> <li>✓ Energy Efficiency Technology List</li> <li>✓ Enhanced Capital Allowances and Business Loans</li> <li>✓ Entrepreneurs and Industrial decarbonisation funds</li> <li>✓ Part L Building Regulations</li> </ul>
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#### 5. Use Energy Intelligently

<p><i>Our ambition is for 100% renewable energy and zero carbon energy systems providing maximised efficiency, flexibility, and support grid stability.</i></p>	<p><b>Policy proposals</b></p> <ul style="list-style-type: none"> <li>✓ Overall energy data for all UK cooling activities needs to be reported nationally (currently only available data is for refrigeration in food, drink, chemical sector)</li> <li>✓ Sector based agreements for carbon reductions suitable for small business users of cooling</li> <li>✓ Recognition of cooling and heating as energy intensive industries</li> <li>✓ Incentives for compliance with key energy reduction measures</li> </ul>	<p><b>Possible policy mechanisms</b></p> <ul style="list-style-type: none"> <li>✓ DUKES/ECUK categorisation change to show cooling for office buildings, pharmaceutical, datacentres, medical facilities, transport locations, retail, leisure and hospitality sectors</li> <li>✓ Climate Change Levy model of success should be extended.</li> <li>✓ Energy Intensive industry support packages</li> <li>✓ ISO4001 energy efficiency</li> </ul>
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#### 6. Developing the Best People and Skills

<p><i>Our ambition is that everyone involved in cooling and heating systems purchasing, maintenance or operation has adequate technical understanding and responsibility for championing net zero.</i></p>	<p><b>Policy proposals</b></p> <ul style="list-style-type: none"> <li>✓ See skills and people Policy Brief. Industry needs long term solutions to provide certainty in investment in people</li> </ul>	<p><b>Possible policy mechanisms</b></p> <ul style="list-style-type: none"> <li>✓ Specialist skill requirement for owner operators of significant cooling installations</li> </ul>
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#### 7. What else? Whole System Sustainability

<p><i>Our ambition is that everyone involved in cooling and heating systems purchasing, maintenance or operation has adequate technical understanding and responsibility for championing net zero.</i></p>	<p><b>Policy proposals</b></p> <ul style="list-style-type: none"> <li>✓ Need to incentivise demand response flexibility as part of system controls and supply of excess energy back into the grid</li> <li>✓ Use of heat storage, coolth storage and phase change materials</li> </ul>	<p><b>Possible policy mechanisms</b></p> <ul style="list-style-type: none"> <li>✓ Climate Change Levy</li> <li>✓ Enhanced Capital Allowances</li> <li>✓ Energy Technology List</li> <li>✓ WEEE</li> </ul>
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Further policy briefs are planned. Check [www.ior.org.uk/beyondrefrigeration](http://www.ior.org.uk/beyondrefrigeration) for updates