AIRAH

Policy and Advocacy Positions

TRANSITION TO A NET ZERO FUTURE

PROFESSIONALISM AND SAFETY

RESILIENCE

**Australian Institute of Refrigeration,
Air Conditioning and Heating (AIRAH)**
Level 3, 1 Elizabeth St Melbourne Vic 3000
03 8623 3000

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PREPARED BY

Australian Institute of Refrigeration,
Air Conditioning and Heating (AIRAH)

03 8623 3000 | airah.org.au | airah@airah.org.au

Level 3, 1 Elizabeth St
Melbourne Vic 3000

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About AIRAH

The Australian Institute of Refrigeration, Air Conditioning and Heating (AIRAH) is an industry-led organisation that represents the entire heating, ventilation, air conditioning and refrigeration (HVAC&R) value chain, from tradespeople through to university-educated engineers and business leaders. This overarching perspective – and reach to more than 25,000 industry participants – puts AIRAH in a position to develop and promote the most efficient, productive and resilient HVAC&R industry for Australia's future.

The 21st-century imperatives of providing healthy indoor environments while reducing emissions and increasing energy productivity present our nation with significant change, challenges and opportunities. It is important that all stakeholders from the built environment and refrigeration sector come together to meet these challenges, because all of us have a part to play in achieving low emissions and in ensuring that technical challenges are met and risks are mitigated.

AIRAH will continue to partner with all levels of government, industry and the education sectors to improve the environmental performance of existing and new HVAC&R systems. We take a collaborative approach to put positive action firmly on the agenda, and keep it there. AIRAH appreciates that it is important for all stakeholders to understand not only the vital role the HVAC&R industry has in the wider economy, but also the role the industry can play in helping Australia and other countries to achieve our environmental aspirations and international and national commitments.

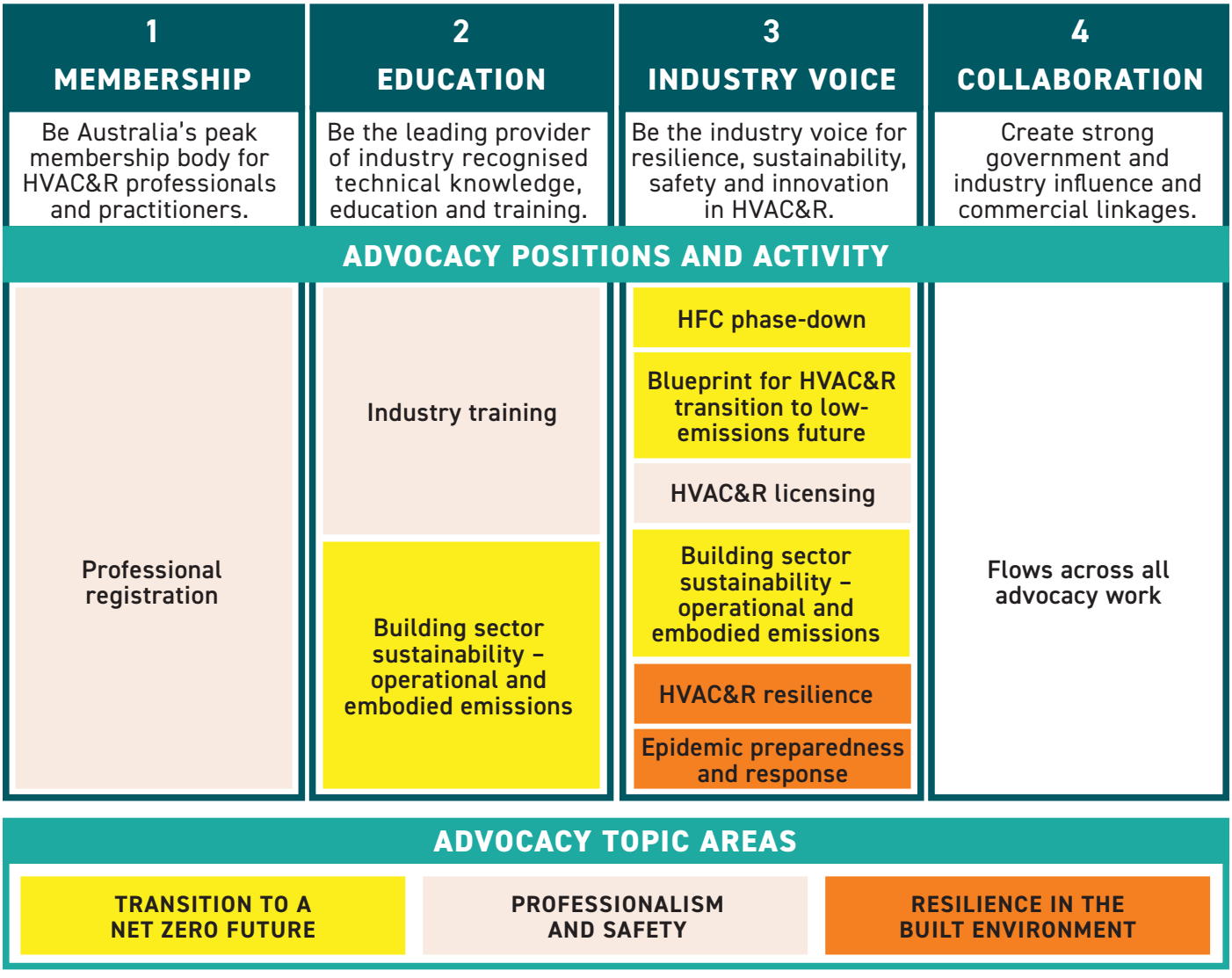
AIRAH has been representing the HVAC&R industry in Australia for a century, since 1920. This paper sets out AIRAH advocacy positions on the strategic topic areas that the Institute is focused on for 2020–2022, namely:

- Transition to a net zero future
- Professionalism and safety
- Resilience

AIRAH's advocacy activity and strategic goals

The advocacy positions detailed in this document support AIRAH's Strategic Plan for 2020–2024. That includes the Institute's vision of safe, sustainable, healthy and effective environments, and the vision of creating an Australian HVAC&R industry that is highly skilled and professional, safe, sustainable and environmentally effective.

The diagram below shows how AIRAH's advocacy work strengthens the four pillars of the strategic plan, and also how it is organised into three strategic topic areas.



As well as focusing on these specific themes, AIRAH continues to advocate for greater recognition of the HVAC&R industry in general, and AIRAH itself, through all of its activities.

Australia, as a signatory to the Paris Climate Change Agreement COP21, has now committed to the global transition to net zero emissions, and to reaching net zero emissions nationally around 2050. As Australia moves to meet this challenge, it is becoming clearer that the built environment, including the refrigeration sector, has a vital part to play.

The main sustainability impacts of HVAC&R are energy consumption, water consumption, indoor environment quality, and refrigerant-related atmospheric changes, all of which are inter-related. Before clean energy can be effectively used in the built environment, the systems using the energy have to be optimised and efficient.

The operation of refrigeration and air conditioning systems consumes almost a quarter of all electricity generated in Australia, and is responsible for almost 12 per cent of Australian total national emissions (Cold Hard Facts 2020). To reduce these emissions AIRAH notes that:

- Buildings and refrigeration infrastructure must become more energy efficient and more energy productive. This includes higher standards for fabric thermal performance and building sealing, as well as performance benchmarks for ongoing operation and maintenance.
- HVAC&R systems must be designed, installed, commissioned and maintained for high efficiency and low emissions. Measurement, monitoring and ongoing maintenance are the keys to improving energy efficiency and productivity of the existing HVAC&R systems. Direct emissions of high global warming potential (GWP) refrigerants must remain a focus.
- The energy used to run high-efficiency HVAC&R in highly efficient buildings and the cold chain must be from a clean low-carbon source.

Through these three key improvements – more efficient buildings, more efficient and lower-emission systems, and cleaner low-carbon energy sources – the emissions associated with HVAC&R, buildings and the cold chain can be dramatically reduced. Education and training of all supply chain participants is vital for achieving these goals.

In the period 2020–2022, AIRAH is focusing its advocacy activities on three areas that will help Australia transition towards a net zero future.

The HFC phase-down

Australia is undertaking a statutory phase-down of HFC imports that will reduce HFC imports (based on CO_2-e) by 85 per cent by 2036. This work represents our government's commitment to the Kigali Amendment, a worldwide agreement to a global 85 per cent phase-down of hydrofluorocarbons (HFCs) by 2050. This is anticipated to avoid up to 0.4°C of global warming this century. AIRAH has been partnering with industry and government to help achieve this goal.

The move to low-GWP refrigerants and associated technologies presents the HVAC&R industry with many challenges. Some low-GWP refrigerants are flammable, some are toxic, and some operate at very high pressures. These characteristics, combined with a lack of industry familiarity and training, present safety challenges for the industry, and society as a whole. Most of the refrigerants that licenced technicians have been trained on will be replaced in the near future, meaning that practitioners in the field will need retraining.

Choosing a refrigerant has also become more complex. Contemporary low-GWP refrigerants include natural refrigerants, synthetic refrigerants and blends of refrigerants that can include a percentage of high-GWP refrigerants covered by the HFC phase-down.

AIRAH's position is that the refrigerant and technology chosen for any particular application should be based on a holistic analysis of multiple criteria. AIRAH promotes the safe and responsible use of refrigerants and supports the efforts to advance technologies that minimise impact on the environment while enhancing performance, cost effectiveness, and safety. AIRAH is technology neutral in its support of all low-GWP refrigerant technologies.

AIRAH will:

Regulatory

- Advocate for licencing and registration change to support regulatory compliance and the transition to low-GWP refrigerants by producing a detailed problem statement / situation analysis and licensing position statement; conducting stakeholder engagement with government and industry and incorporating the outcomes into an advocacy plan; and developing and implementing a communications program.
- Advocate for the development of new trade technical resources and training for all low-GWP refrigerants and their associated technologies. AIRAH has advocated for publicly available transparent design, installation and refrigerant handling guidelines to be developed for all types of low-GWP refrigerants, including CO_2, NH_3, HCs, HFOs and new refrigerant blends, as well as an update for existing HFC refrigerant resources.

Education and training

- Provide critical technical information and safety standards and compliance training for the HFC phase-down, and will engage with the Australian Refrigeration Council (ARC), Refrigerant Reclaim Australia (RRA), Refrigerants Australia and other industry and government bodies and regulators.
- Seek funding to develop training for engineers on the implementation of AS/NZS 5149 (Refrigeration Safety Standard).
- Promote the free online flammable refrigerant safety course developed in collaboration between industry and government.
- Promote the availability of trade training courses on low-GWP refrigerants through its communication channels.
- Provide industry guidance to the Greater Ovens TAFE project to develop innovative training on low-GWP refrigerants.

- Develop guidance to improve HVAC engineers' refrigeration knowledge with the support of the Refrigeration STG.
- Continue to raise awareness through all its activities. This includes national conferences, national seminars, state seminars, online training and webinars, Ecolibrium and HVAC&R Nation magazines, HVAC&R News, social media channels, case studies, policy and regulatory input and advocacy to government, Standards Australia and the Australian Building Codes Board. The AIRAH Refrigeration STG will also promote the Ecolibrium HFC phase-down article and podcast to its industry contacts.

The Innovation Hub for Affordable Heating and Cooling

The Innovation Hub for Affordable Heating and Cooling (i-Hub) is an initiative led by AIRAH in conjunction with CSIRO, Queensland University of Technology (QUT), the University of Melbourne and the University of Wollongong and supported by Australian Renewable Energy Agency (ARENA) to facilitate the HVAC&R industry's transition to a low-emissions future, stimulate jobs growth, and showcase HVAC&R innovation in buildings.

The objective of i-Hub is to support the broader HVAC&R industry with knowledge dissemination, skills development and capacity building. By facilitating a collaborative approach to innovation, i-Hub brings together leading universities, researchers, consultants, building owners and equipment manufacturers to create a connected research and development community in Australia.

The i-Hub initiative consists of three interlinked activity streams:

#1 **Living Laboratories**
These are real-life buildings and spaces where the real-life performance of innovative products and services can be tested. The spaces are highly instrumented and flexible, allowing a wide range of innovations to be investigated, from both energy and user-experience perspectives.

Living Laboratories are spaces where owners, suppliers, users and researchers can collaborate, create and reflect on alternative solutions for affordable heating and cooling. The Living Laboratories also act as a "Green Proving Ground", where suppliers can validate the performance and applicability of their technologies.

#2 **Smart Building Data Clearing House**
Accurate and detailed building data is needed to properly manage energy use and improve building operations. But access to such data is limited by a lack of open standards and trusted processes for the sharing of diverse data sets. Opportunities, from new internet-of-things sensors and data streams, also need to be explored.

i-Hub aims to curate the Australian Smart Buildings Data Clearing House, a single location for accessing a wide range of energy and building data. It aims to increase the quality and value of data sets, and empower Australian businesses to develop new data analytics services.

This data, combined with the services of i-Hub member companies, will be used by building owners and property managers to save energy, improve efficiencies and reduce costs.

Data will also provide evidence to assist in decision-making and inform policy.

#3

Integrated Design Studios

The Integrated Design Studios concept is about involving HVAC&R engineers at the early stages of the building design process. At the conceptual design stage of a project, decisions can make the most impact and changes can be made at least cost.

Early collaboration between architects, HVAC engineers and other stakeholders creates opportunities to deliver major cost and energy savings.

The i-Hub Integrated Design Studios activity aims to facilitate collaborations with building owners and the design industry to:

- Increase innovation at the conceptual design stage
- Develop an evidence base of new zero energy buildings concepts
- Support knowledge development of the next generation of building professionals
- Influence cultural practices across the design industry.

Building sector sustainability

AIRAH advocates for all governments and all industry stakeholders to commit to achieving net-zero-emissions buildings through a range of programs and measures:

Regulatory

- COAG Energy Council's Trajectory for Low Energy Buildings, which outlines a pathway towards "zero energy- (and carbon-) ready buildings", increases to the energy efficiency provisions in the National Construction Code and further consideration of options for existing buildings.
- Expansion of the National Australian Built Environment Energy Ratings System (NABERS), which has grown awareness of the benefits of energy performance of commercial buildings and driven better comfort and bill-saving outcomes for occupants. A nationally harmonised rating system for residential buildings is also required.
- Strong mandatory minimum standards for new buildings, equipment and appliances, with the long-term goal of net zero emissions. This includes better design integration through commissioning and validation testing but also strong minimum standards for the operation and maintenance of existing buildings and infrastructure.
- Harmonised targeted incentives and programs between states and territories to accelerate action, and to motivate and support higher performance, including incentives and the use of government market power.
- The development of climate-zone-specific energy policies requiring measurement, benchmarking and disclosure of energy use.

Education

- The Innovation Hub for Affordable Heating and Cooling (i-Hub) (NEPP measure 9b) to drive knowledge dissemination, skills development and capacity building.
- *Opportunity knocks – Accelerating energy efficiency for mid-tier buildings.* This set of recommendations, developed by AIRAH and a range of industry and government stakeholders, aims to accelerate improvements to mid-tier buildings and harness their emissions-reduction potential.

- Continued improvement, promotion and uptake of the Calculating Cool building HVAC online rating tool, including an expansion of the tool to cover low-emission technologies.
- The development of the Fairair website to provide in-depth, unbiased information to consumers about home cooling options and products.

PROFESSIONALISM AND SAFETY

AIRAH's mission is to create an Australian HVAC&R industry that is highly skilled and professional, safe, sustainable and environmentally effective.

The HVAC&R industry operates under a wide range of legislation and regulatory requirements and regimes from all levels of government. AIRAH informs and works with all regulators to help bring an HVAC&R voice to the development of the environmental, energy, building, WHS, plumbing, electrical and health regulations that impact the HVAC&R industry.

AIRAH seeks to improve professionalism and safety in the industry by focusing its advocacy efforts in three main areas.

Professional registration of engineers

The *Building Confidence* report, published in 2018, provided an independent assessment of problems in the building and construction industry. This highlighted the need for a nationally harmonised registration scheme for building practitioners, including engineers, to "restore community confidence in Australia's building and construction industry".

Since then, the Building Ministers' Forum has set out a roadmap for reform, and a number of states have started implementing professional registration schemes, including New South Wales, Victoria and Western Australia. Queensland already has a professional registration scheme. The Australian Building Codes Board is also developing a National Registration Framework, to ensure harmonisation of the different schemes across the country.

AIRAH is supporting the establishment of these schemes through its AIRAH Registered Professional Engineer (ARPEng) program. This is the professional accreditation for engineers operating in the HVAC&R industry and is designed to meet the requirements of the Registered Professional Engineer of Queensland (RPEQ) and other state-based schemes as they are released.

As the details of the various registration schemes are released, AIRAH is also providing feedback to regulators to ensure that the regulations effectively support and strengthen Australia's HVAC&R industry, as well as the wider building and construction industry.

In general, AIRAH advocates based on three key principles:

- *HVAC&R should be clearly recognised as a branch of mechanical engineering*
- *State and territory professional registration schemes should be harmonised and mutually recognised, so that registered practitioners can work across jurisdictions without having to pay multiple registration fees*
- *There should be alternative pathways to registration for practitioners who do not have Washington Accord qualifications, but do have appropriate qualifications and experience.*

HVAC&R licensing

While professional registration of building practitioners will cover engineering work, the industry also comprises tens of thousands of VET-trained technicians who design, install, commission, maintain, repair, and decommission refrigeration and air conditioning plant every day.

AIRAH supports a nationally consistent licensing scheme. This should be focused on the trade covering the applications of all refrigerants in all sectors, and should establish refrigeration and air conditioning as a trade of its own, separate to electrical and plumbing. It should be based on minimum standards of competency and sector of operation and include a separate contractor/business licence if required.

AIRAH will advocate for this governance by:

- Producing a detailed problem statement/situation analysis and licensing position statement
- Conducting stakeholder engagement with government and industry and incorporating the outcomes into an advocacy plan
- Developing and implementing a communications program.

Industry training

AIRAH is committed to providing the tools to advance the knowledge and skills of HVAC&R professionals, and raise awareness of changing legislation and regulatory requirements. AIRAH develops and offers training and learning opportunities in technical (HVAC&R) skills, leadership, business and personal development.

Offerings include:

- The AIRAH Accredited Professional Diploma of Building Services – HVAC&R. This is the only HVAC&R-specific course designed by industry experts for postgraduate entrants to the HVAC&R industry.
- The AIRAH Professional Certificate in HVAC&R Fundamentals. This course consists of eight units covering both air and water-based systems, and provides students with an in-depth knowledge of HVAC&R equipment.
- Essential Safety Measures and Smoke Control and Fire Dampers. These courses give participants knowledge about the codes and standards related to the control of fire and smoke within buildings in Australia.
- NCC Volume 1 Section J. This course gets participants up to date with the significant changes to Section J in the National Construction Code 2019, with an emphasis on its impact to the energy efficiency provision.

- We engage and collaborate with key stakeholders to ensure our training and professional development offerings are future focused for the industry and are relevant for a smooth transition to a net zero future.

RESILIENCE IN THE BUILT ENVIRONMENT

In the current global physical, social and environmental situation, the ability of a building to deal with external and unusual impacts due to pandemics, bushfires, climate change, extreme heat and cold, severe storms, earthquakes, social unrest, terrorist attack or criminal misadventure, is becoming more important and more valued.

HVAC&R resilience

The resilience of Australian buildings, the cold chain, IT infrastructure, health services, manufacturing facilities and processing sectors all depend on the resilience of the HVAC&R systems that support them. The resilience of HVAC&R systems has to be addressed to safeguard the built environment and its occupants during extreme events.

AIRAH promotes the following activities in relation to HVAC&R resilience:

- Developing a resilience checklist to be used by engineers/building owners.
- Developing a best practice guide for resilience in the built environment.
- Undertaking more research, particularly into the magnitude of impacts and change in future climate design data over the typical 10 to 20 year "useful life" of an HVAC&R system.
- Strong federal, state and local governmental policy platforms around resilience, which includes strong minimum standards as well as incentives for best practice and support for training and professionalism.
- Building awareness around the growing importance of HVAC&R resilience through the activities of the Resilience Special Technical Group. This includes awareness raising among the HVAC&R community and other stakeholders, as well as exploring opportunities to collaborate with industry organisations and government to develop and provide appropriate tools to address resiliency in the built environment.
- Sharing resilience skills and experiences within the AIRAH network including communicating to broader Australian stakeholders via ASBEC, NCCARF etc., as well as leveraging international relationships through kindred organisations such as ASHRAE, CIBSE, IIR, IAR and IEA.

Epidemic preparedness and response

In 2020, there was increased appreciation of HVAC&R and other building systems and the role they play in preventing the spread of COVID-19. More broadly, this has led to analysis of these systems to determine how they may help the spread of other infectious diseases.

AIRAH will advocate for the importance of HVAC&R in these conversations by:

- Providing up-to-date advice for the industry and the general public on HVAC&R and how it interacts with infectious diseases such as COVID-19
- Collaborating in research projects to find out more about how such diseases are spread, and investigating strategies for preventing transmission
- Forming an Indoor Air Quality STG that will develop knowledge in these areas.

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