



Wednesday, November 29, 2022

Joint Standing Committee on Trade and Investment Growth

The Australian Institute of Refrigeration, Air Conditioning and Heating (AIRAH) is grateful for the opportunity to comment on your inquiry into how trade and investment can support Australia's transition to green energy.

First, to provide some background to our submission, AIRAH has operated since 1920, and is Australia's peak membership body for professionals and practitioners working in the heating, ventilation, air conditioning and refrigeration (HVAC&R) – building services industry, a hidden, yet innovative industry that employs over 298,000 people in Australia, is worth \$38 billion, uses more than 24 per cent of the country's electricity and accounts for around 12 per cent of our carbon dioxide emissions.

As well as being one of the largest energy users of energy in the built environment, HVAC&R also plays a major role in determining the peak loads across the grid, and their timing. As noted by the International Energy Agency (IEA), over the coming decades, cooling will drive peak electricity demand, particularly in hot countries like Australia. Investing in better HVAC&R technology and design offers huge opportunities for reducing peak demand and smoothing out our energy load. It can also prolong the lifespan of our existing infrastructure.

We see a number of key areas where trade and investment in HVAC&R could support Australia's transition to a green energy superpower.

Design, installation, commissioning and maintenance

Better design, installation, commissioning and maintenance practices can provide huge improvements in energy efficiency. We note the work that [DCCEEW is doing](#) to quantify the impact of poor installation and maintenance for air conditioning and refrigeration equipment. AIRAH's [Refrigeration Special Technical Group](#) notes that good design can reduce energy demand in a refrigeration installation by two-thirds.

Good design, installation, commissioning and maintenance also relies on good licensing regimes and policing of those regimes.

Smart buildings

Building management systems (BMS) and data analytics are being employed to run equipment more efficiently. AIRAH's [Big Data Special Technical Group](#) has highlighted how big data and analytics can assist with building tuning and enable predictive maintenance, both of which can significantly reduce energy demand.

As part of the ARENA-supported Innovation Hub for Affordable Heating and Cooling (i-Hub), a number of projects were completed that showed the potential for demand management of HVAC&R systems to smooth grid load, particularly in the [Smart Building Data Clearing House initiative](#). These projects highlighted that in the future, buildings will not just be energy users – they will have the potential to regulate the grid by using or storing energy at suitable times. This will become more important as more green energy comes online.

Energy-efficiency requirements

AIRAH supports the lifting of minimum performance standards for equipment (MEPS) and developing performance metrics that fully capture the energy-efficiency advantages of next-generation technologies optimised for real-world performance.

Similarly, lifting energy-efficiency requirements for building design through mechanisms such as the National Construction Code can significantly reduce demand and assist with the transition to green energy.

Electrification and demand management

Heat pumps are an existing technology that can replace gas boilers and help us electrify our buildings. Investment in heat pumps for industrial heating and cooling - already widely used in Europe – could electrify other sectors too.

Like batteries, thermal energy storage can be charged when renewable energy is plentiful, and used when the sun does not shine and the wind does not blow.

District heating and cooling, where many facilities are served by shared plant, can also help balance load and reduce maintenance costs.

Training and education

Technology is only as good as the workforce that installs it. Many sectors of the Australian economy are experiencing a skills shortage, and HVAC&R is no exception. This is likely to get worse as technology change accelerates, and our training infrastructure struggles to keep up.

AIRAH's primary aim is to develop the competence and skills of industry practitioners so that they can better meet society's evolving health, safety and environmental demands, and the challenges of a rapidly changing world. AIRAH encourages world's best practice within the industry through [continuing professional development](#), [accreditation programs](#) and a wide range of [technical publications](#).

We believe that investment in training and education for HVAC&R engineers and technicians is urgently needed to support Australia's transition to green energy.

Once again, AIRAH appreciates the opportunity to provide input through these consultations and welcomes any further questions the government may have.

Regards,



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