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Australian Refrigeration Council (ARC)

Submission to the Productivity Commission

via website submission link:

Key recommendations

Expand the ARCTick Licensing Scheme to All Refrigerants

- Extend the current national ARCTick scheme beyond fluorocarbon-based refrigerants to include all refrigerants.
- Align this expansion with energy efficiency goals to address indirect (upstream) emissions and improve environmental outcomes whilst supporting consumer protection and safety goals.

Leverage Licensing to Improve Energy Efficiency

- Recognize that Refrigeration and Air Conditioning (RAC) equipment accounts for 24.7% of Australia's electricity consumption and is essential when considering net zero energy goals.
- Emphasize that improving installation quality—regardless of refrigerant type—can significantly enhance energy efficiency and reduce electricity consumption and therefore minimize generation.

Eliminate State-Level Licensing Duplication

- Address the inefficiency of dual licensing systems in Queensland, New South Wales, and Victoria, where state-level requirements duplicate the national ARCTick scheme.
- Recommend a streamlined, nationally consistent licensing framework to reduce regulatory burden, improve productivity, support industry efficiency and consumer confidence.

Boost Productivity Through Regulatory Harmonization

- Emphasize the significant productivity gains achievable by reducing fragmented and overlapping regulatory requirements across jurisdictions.
- Consider the productivity savings from the flow on effects of a national scheme such as simplification and alignment of training.

About the Australian Refrigeration Council (ARC)

The ARC is the peak national licensing body for Australia's refrigeration and air conditioning sector. Membership of the ARC is made up of the leading industry associations representing the diverse segments of the climate control industry (refrigeration and air conditioning) in Australia including automotive, stationary (built environment), and contractor organisations. The ARC is appointed by the Australian Government to administer the national refrigeration and air conditioning licence scheme, the ARCTick scheme, under the *Ozone Protection and Synthetic Greenhouse Gas Management Act 1989* and associated regulations. This national scheme governs the handling of ozone depleting substances (ODS) and synthetic greenhouse gases (SGGs) to ensure their environmentally responsible use and expert management across Australia. Through this partnership with the Department of Climate Change, Energy, the Environment and Water (DCCEEW) the ARC and its members play a vital role in supporting Australia's environmental objectives by promoting professional standards, preventing emissions of ozone-depleting substances and synthetic greenhouse gases, and ensuring compliance across the sector.

The refrigeration and air conditioning (RAC) industry is a cornerstone of Australia's modern economy and infrastructure. As of 2022¹, the national stock of vapour compression-driven RAC equipment exceeded 62 million units, spanning every sector—from residential fridges and air conditioners to large-scale commercial chillers, cold storage facilities, and transport refrigeration systems. This vast and diverse equipment base is essential to the functioning of homes, hospitals, supermarkets, data centres, and the cold food chain.

The economic footprint of the RAC industry is substantial. In 2022, total expenditure on equipment, installation, maintenance, energy, and wages accounted for over 2% of Australia's GDP. The industry directly supported 378,000 jobs—2.6% of national employment—highlighting its critical role in both skilled trades and broader supply chains. The ARC, through its licensing and compliance framework, underpins this workforce, with over 83,000 active Refrigerant Handling Licence holders and more than 26,000 Refrigerant Trading Authorisations issued nationally.

The sector is also one of the largest consumers of electricity in the country, responsible for approximately 24% of all electricity used in 2022. This translates to 66,700 GWh of energy, with associated greenhouse gas emissions (direct and indirect) representing 12.6% of Australia's total emissions. Notably, the emissions intensity of RAC equipment is declining, thanks to improvements in energy efficiency and a shift toward lower global warming potential (GWP) refrigerants.

Recent years have seen a significant increase in the uptake of heat pumps—particularly for hot water and space heating—driven by government incentives to replace gas and resistive electric systems. While many of these units were initially

¹ <https://www.dcceew.gov.au/environment/protection/ozone/publications/cold-hard-facts-4>

charged with high-GWP refrigerants like HFC-410A, the market is now transitioning toward hydrocarbons (HCs) and other natural refrigerants. This trend is mirrored in the broader industry, where the use of HCs, carbon dioxide (R744), and ammonia (R717) continues to grow steadily, helping to cap the expansion of high-GWP refrigerant banks.

Despite this progress, challenges remain. The refrigerant bank—estimated at over 55,000 tonnes in 2022—has begun to decline in CO₂-equivalent terms, indicating a turning point in emissions intensity. However, high-GWP refrigerants such as HFC-404A remain prevalent, particularly in commercial refrigeration, and are projected to exceed Australia's HFC import quota under the Kigali Amendment unless further regulatory measures are introduced.

The ARC plays a pivotal role in managing these transitions, ensuring that the workforce is qualified, compliant, and equipped to support the safe and sustainable use of refrigerants. Its licensing data and industry engagement provide critical insights into workforce trends, refrigerant use, and emerging technologies—making it an essential partner in achieving Australia's emissions reduction and energy efficiency goals.

In 2024 there were over 85,000 technicians licensed to handle refrigerant gases with 87.5% of total licences falling into three categories: 38.5% holding a full Automotive Air Conditioning Licence, 31% a Full Refrigeration and Air Conditioning licence, and 18% a Restricted Heat Pump (Split System) Installation and Decommissioning licence. Of the remainder, 11 percent were issued to trainees (apprentices), and less than 2% issued for a range of highly specialised restricted licenses. Licence holders require specialist knowledge and skills to safely manage the installation, maintenance, repairs, decommissioning, customer service, and to ensure compliance and safety of indoor climate in residential, commercial and vehicle settings. More than 21,000 businesses are licenced to store, sell and handle RAC gases and equipment containing regulated gases for the industry.

In addition to managing the national licencing scheme, the ARC manages a compliance program which focuses on education to ensure businesses understand their obligations under their licence and the Refrigerant Handling Code of Practice². The ARC also engages with state governments, adjacent industries like plumbing and electrical, skills councils and training organisations.

While there is a national licence scheme for trades working with RAC regulated gases, the ARCTick scheme, there exists many other regulatory instruments that technicians need to comply with at the national and state government level, and at their industry level. ARC technical resources – Refrigeration and Air Conditioning Mechanics: Licensing and Regulatory Requirements (2022) sets out the current National and State based regulatory requirements, laws and industry codes that refrigeration and air conditioning technicians need to be aware of.³ It lists eight national and multiple state

² https://www.arctick.org/media/29156/refrigerant-handling-codes-of-practice-2024-1_2.pdf

³ <https://www.arcltd.org.au/media/q4fhrtz/refrigeration-and-air-conditioning-licensing-requirementsv2.pdf>

based regulatory schemes, agencies and codes of practice that might apply in addition to RAC licence conditions.

It is important to clarify that RAC work involving ODS and SGGs is regulated under Commonwealth legislation, and the associated licensing requirements do not cover non-regulated refrigerants, for example flammable Hydrocarbons, high pressure carbon dioxide or toxic ammonia. While the key purpose of the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 and associated regulations is environmental protection, a significant outcome of the ARCTick scheme is standardised national safe and effective installation. Extending the current ARCTick scheme to include lower GWP flammable gases that are not currently regulated under the Act would capture the specialist skills required to ensure the safe use in the automotive industry of these newer gases, which are not currently regulated at all in some states. ARCTick licenced technicians are trained in the safe use of these products, and extending the licencing to include them would bring licencing consistency and consumer benefits across the entire industry.

These national licencing requirements for engaging in RAC work delivered via the ARCTick scheme are distinct from and cannot be substituted by state-based refrigeration/air conditioning, plumbing or electrical licences, registrations or accreditations. The ARC is supportive of programs to boost workforce capacity of licensed technicians who can safely and competently undertake the decommissioning and installation of split system heat pump hot water heaters circulating refrigerants, however, due to the specialised nature of dealing with ODS and SGGs, compliance with state-based licensing requirements alone is insufficient for engaging in RAC work governed by the national scheme. There is an inconsistent approach to state regulation of RAC work. Not all states regulate, and where they do, the regulations do not always align with the national scheme, potentially creating confusion among practitioners and the broader industry, including consumers. Such interpretations risk non-compliance with federal law and undermine the integrity of the licensing framework established to protect the environment and uphold professional standards in the handling of controlled substances.

The ARC finds that occupational and national licensing terms are often used interchangeably and the ideal outcome from the Productivity Commission National Competition Policy analysis will deliver an occupational licencing scheme that provides for labour mobility and consumer protection nationally, that meets the needs for specific trades.

1. Occupational Licensing

Definition:

A regulatory mechanism where individuals must meet various specific qualifications and obtain a license to legally work in a particular occupation.

Key Features:

- **Occupation-specific:** Applies to a wide range of professions (e.g., electricians, plumbers, RAC technicians, nurses).
- **Jurisdiction-based:** Typically regulated at the **state or territory level** in Australia.

- **Purpose:** Consumer protection.
- **Examples:**
 - A refrigeration technician needing various state-issued license to install systems.
 - A nurse needing registration with a state health board.

Challenges:

- **Fragmentation:** Different rules and standards across jurisdictions.
- **Duplication:** Workers moving interstate may need to reapply or meet different criteria.
- **Limited mobility:** Especially problematic for national employers or mobile trades.

2. National Trade Licensing

Definition:

A **nationally consistent licensing framework** for specific trades, allowing licensed individuals to work across all states and territories without needing additional approvals.

Key Features:

- **Trade-specific:** Focuses on skilled trades (e.g., electrical, plumbing, refrigeration).
- **National scope:** One license valid across all of Australia.
- **Streamlined:** Reduces red tape, fees, and delays.
- **Often part of broader reform:** Like the National Competition Policy or COAG initiatives.

Examples:

- The proposed **national licensing scheme for electrical trades** under the NCP.
- The **ARClick licence** for handling refrigerants (already national, but not a full occupational license).

Comparison Table

Feature	Occupational Licensing	National Trade Licensing
Scope	Broad (many occupations)	Narrower (specific trades)

Feature	Occupational Licensing	National Trade Licensing
Jurisdiction	State/Territory-based	National (federally coordinated)
Mobility	Limited (varies by state)	High (one license, all states)
Regulatory Body	Multiple (state regulators)	Central or harmonised authority
Example	State plumbing license	National RAC licence
Goal	Consumer protection	Labour mobility, productivity, consistency, quality control, safety and environmental protection (for the ARCTick scheme)

Estimates indicate that occupational licensing reform could increase real GDP by \$10.33 billion (0.4%). The ARC believes there is real and measurable economic benefit from strengthening and expanding the existing National ARCTick scheme to include all RAC work that is carried out by trades. National trade licensing represents a harmonised evolution of occupational licensing, aiming to streamline fragmented systems across jurisdictions. By establishing a single, consistent national standard, it addresses inefficiencies and inconsistencies that currently affect high-risk, high-demand trades such as refrigeration and air-conditioning. This approach not only enhances workforce mobility and regulatory clarity but also strengthens public safety and consumer confidence. As industries grow and evolve, a unified licensing framework ensures that qualifications, compliance, and professional standards are maintained uniformly across Australia. Ultimately, national licensing supports a more agile, skilled, and accountable workforce—better equipped to meet the demands of a modern, low-emissions economy.

Occupational licensing - Information request 1

1. Which occupations would be best-suited to a national licensing scheme?

RAC Technicians and Restricted Split System Heat Pump Installers

- RAC Technicians

Only the eastern states, Queensland, New South Wales and Victoria all require RAC technicians to hold an additional state-based licence to work in their jurisdiction and each have different scopes of work and qualification

requirements. This leads to confusion and cost. Contrast this with the national ARCTick scheme which applies across the nation, with the major number of States and Territories defaulting to it solely for consumer protection objectives.

All states and territories require RAC technicians to hold a Restricted Electrical Licence and again the scope of work and qualification requirements vary from state to state.

In addition, Queensland requires a licence to use flammable Hydrocarbon refrigerants.

- **Restricted Split System Heat Pump Installers**
Increasingly RAC qualifications are being utilized by electricians and plumbers.

For example they are undertaking the UEE20120 Certificate II in Split Air conditioning and Heat Pump System qualification to obtain the ARC's RRSS03 Refrigerant handling licence for Restricted heat pump – split systems – installation and decommissioning.

This boosts the workforce capacity of ARC licensed technicians who can safely and competently undertake the installation and decommissioning of split system heat pump hot water heater circulating refrigerants noting that due to the specialised nature of dealing with ODS and SGGs, compliance with state-based licensing requirements alone is insufficient for engaging in RAC work governed by the national scheme. This may inadvertently create confusion among practitioners and the broader industry. Such interpretations risk non-compliance with federal law and undermine the integrity of the licensing framework established to protect the environment and uphold professional standards in the handling of controlled substances.

- RAC automotive technicians are also licenced under the existing national ARCTick scheme.

2. What would be the first steps towards a national licensing scheme for selected occupations?

The infrastructure is already in place for a national RAC licensing scheme via the ARCTick scheme to cover RAC technicians and restricted split system heat pump installers based on national refrigerant handling licences and qualifications. The existing scheme should be expanded to include all refrigerants and RAC equipment, including lower GWP products and equipment that requires the same specialist occupational skills to manage flammability and other hazards to manage safe and energy efficient

practices. This would form the basis for consultation with the key stakeholders including state regulators, national industry bodies and unions.

3. Why did previous attempts at a national licensing scheme, such as the National Occupational Licensing Scheme, fail? How could a renewed attempt overcome the barriers to a national licensing scheme?

The 2013 Decision Regulation Impact Statement (RIS)⁴ evaluated the costs and benefits of introducing a national licensing system for the refrigeration and air-conditioning (RAC) occupations in Australia. It aimed to address inconsistencies in state and territory licensing, which created regulatory burdens and hindered labour mobility. The RIS assessed four options: (1) no licensing except for the Commonwealth ARCTick licence, (2) national licensing (models A and B), (3) automatic mutual recognition, and (4) maintaining the status quo.

The ARCTick-only model offered the highest net economic benefit (10-year NPV of \$74.88 million). The RIS concluded that while national licensing would improve labour mobility and reduce red tape, stakeholder concerns and political resistance influenced the final recommendation. In addition the proposed model was economically flawed, policy decision making was to be maintained at a State, rather than national level, thereby limiting the likely efficiencies.

A renewed attempt to implement a national licensing scheme for refrigeration and air-conditioning (RAC) occupations based on the ARCTick model could succeed by directly addressing the shortcomings of the previous effort. First, the ARCTick scheme would need to be expanded to cover all refrigerants, including natural alternatives like hydrocarbons and ammonia, and be backed by stronger compliance and enforcement powers to match or exceed those of state-based systems. This would help reassure stakeholders concerned about safety and consumer protection. Clear communication of the benefits—such as improved labour mobility, reduced red tape, and national consistency—would be essential, along with transition support for jurisdictions and licensees. By addressing both the technical and political barriers, a modernized ARCTick-based national licensing system could finally deliver the efficiency and consistency that the original reform aimed to achieve.

⁴ <https://oia.pmc.gov.au/sites/default/files/posts/2014/07/Final-Decision-RIS-RACM.pdf>

4. What benefit would a national licensing scheme provide over an expansion of the automatic mutual recognition scheme?

Mutual recognition in itself is a positive step towards cost effective regulation, uptake by business, reduced costs for consumers, and that reducing complexity, so can be a positive. For example, if each State's RAC licence was based on the same national qualifications. The scope of work and qualification requirements in the existing state-based licences for RAC technician and their associated Restricted Electrical work are all different, making mutual recognition impractical.

One of the major benefits would be that one national occupational licence would align with the current national handling licence requirements for regulated refrigerants and also cover:

- the safe handling of the non-regulated refrigerants for example flammable Hydrocarbons, high pressure carbon dioxide and toxic ammonia.
- Associated restricted electrical work

5. How could the PC best quantify the benefits of a national licensing scheme?

The economic benefits of the ARCTick scheme were evaluated in the 2013 Final Decision Regulation Impact Statement Proposal for national licensing of the refrigeration and air-conditioning occupations⁵. The base case, called No Licencing (ARCTick only), estimated the economic benefit of an ARCTick only Model, and these findings have been adjusted for industry growth and inflation for 2025 values. The updated estimates of Net Present Value (NPV), Benefit-Cost Ratio (BCR), and annual net benefits presented in this submission are based on extrapolations from the 2013 Final Decision Regulation Impact Statement (RIS) for the refrigeration and air-conditioning (RAC) industry. These figures have been adjusted for inflation and industry growth using publicly available data, including the Cold Hard Facts 4 report (2023). While this method provides a useful approximation of potential economic impacts, it does not account for changes in regulatory frameworks, market dynamics, technological advancements, or non-linear cost-benefit relationships that may have emerged since the original modelling. As such, these estimates should be interpreted as indicative only and not as a substitute for a comprehensive, updated cost-benefit analysis.

⁵ <https://oia.pmc.gov.au/sites/default/files/posts/2014/07/Final-Decision-RIS-RACM.pdf>

Step-by-Step Estimation Approach

1. Base Year Data from 2013 RIS

From the 2013 Final Decision RIS:

- **Model A (Full National Licensing):**
 - Net Present Value (NPV, 10 years): \$37.73 million
 - Annual Net Benefit: \$7.77 million
 - Benefit-Cost Ratio (total 10-year NPV): 2.81
- **Model B (Contractor-only Licensing):**
 - NPV: \$47.51 million
 - Annual Net Benefit: \$8.55 million
 - Benefit-Cost Ratio (total 10-year NPV): 4.72
- **No Licensing (ARCTick only):**
 - NPV: \$74.88 million
 - Annual Net Benefit: \$11.52 million
 - Benefit-Cost Ratio (total 10-year NPV): 329.72

2. Adjust for Inflation (2013–2025)

Using the Reserve Bank of Australia's average CPI growth (~2.3% annually), the cumulative inflation from 2013 to 2025 is approximately **32%**.

3. Adjust for Industry Growth

According to *Cold Hard Facts 4*:

- The RAC industry now represents **2.6% of Australia's workforce** and over **2% of GDP**, up from ~1.5% in 2013.
- This suggests a **~30–35% increase in industry scale**.

Updated Estimates (2025 Dollars)

Metric	Model A	Model B	No Licensing
Annual Net Benefit	\$10.25M	\$11.30M	\$15.20M
10-Year NPV	\$49.8M	\$62.7M	\$98.9M
Benefit-Cost Ratio	~2.8	~4.7	~330

These are **inflation- and scale-adjusted estimates** based on 2013 modelling and 2025 industry data.

The broader National Occupational Licensing System (NOLS) was not implemented due to political and stakeholder resistance. The national Arctick licence remains the only national requirement, focused on

environmental compliance. It has safely and effectively delivered results to the current day.

International Standards - Information request 2

1. **Are there examples of Commonwealth, state, territory or local government regulation where there should be greater harmonisation with international or overseas standards and related conformity assessments or approvals?**

What sectors should be prioritised for reform?

The federal Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995 calls up several Australian Standards and Codes of Practice including the following, which are all based on International Standards so additional harmonization with International Standards is not required for the RAC work:

- AS/NZS 5149.1:2016 Refrigerating systems and heat pumps—Safety and environmental requirements, Part 1: Definitions, classification and selection criteria (ISO 5149 1:2014, MOD)
- AS/NZS 5149.2:2016 Refrigerating systems and heat pumps—Safety and environmental requirements, Part 2: Design, construction, testing, marking and documentation (ISO 5149 2:2014, MOD)
- AS/NZS 5149.3:2016 Refrigerating systems and heat pumps—Safety and environmental requirements, Part 3: Installation site (ISO 5149 3:2014, MOD)
- AS/NZS 5149.4:2016 Refrigerating systems and heat pumps—Safety and environmental requirements, Part 4: Operation, maintenance, repair and recovery (ISO 5149 4:2014, MOD)
- AS/NZS 60335.2.40:2019 Household and similar electrical appliances — Safety, Part 2.40: Particular requirements for electrical heat pumps, air conditioners and dehumidifiers
- AS/NZS ISO 817:2016 Refrigerants—Designation and safety classification

2. **What is the impact of a lack of harmonisation (e.g. on compliance costs for export, import or multinational businesses, product range, prices, quality, competition, innovation and international trade and investment)?**

RAC equipment manufacturers and importers will be well placed to respond to this question.

3. **What are the barriers to greater harmonisation?**

Not applicable

4. **For sectors where regulators can mandate standards by incorporating international standards as in force from time to time or accept overseas conformity assessments and approvals (e.g. road vehicles, therapeutic**

goods, agricultural and veterinary products, maritime, industrial chemicals and, most recently, consumer products), how is this operating in practice?

Not applicable

- 5. Are there any reforms that should be made to Australia's standards and conformance infrastructure to support greater harmonisation while still addressing specific Australian risks and objectives?**

No

- 6. What measures could support access to international standards incorporated in Australian regulation?**

Not applicable

Other competition reform options - Information request 3

- 1. Which sectors or policy areas need reform to further promote competition?**

Not applicable

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