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AIRAH submission

Emissions Reduction Fund



Prepared by:

**The Australian Institute of
Refrigeration Air Conditioning
and Heating**

AIRAH Strategic aim #1 - *Claim the sustainability space*
AIRAH Strategic aim #3 - *Inform regulation and policy decisions*

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About AIRAH

AIRAH is the recognised voice of the Australian air conditioning, refrigeration and heating industry. We aim to minimise the environmental footprint of our vital sector through communication, education and encouraging best practice.

AIRAH – Strategic Aims

Claim the sustainability space

Through its conferences, publications, manuals and training, AIRAH will educate and motivate the HVAC&R industry and related fields about achieving sustainability. Our aim is to be the HVAC&R organisation whose values are aligned with sustainability in a practical sense

Close the skills gaps

At a time of rapid change of new technology and standards, and a shifting regulatory landscape, AIRAH will provide relevant professional development for HVAC&R industry personnel, and work alongside government and providers to ensure the voids in formal training are filled.

Inform regulation and policy decisions

As the key industry organisation representing HVAC&R in Australia, it is essential AIRAH collaborate with government at both the state and federal levels. The collective skills and specialist knowledge of the Institute can better inform decisions that affect society and the HVAC&R industry.

Build and engage membership

AIRAH will become the institute of choice for HVAC&R professionals in Australia. This means ensuring that formal connection with AIRAH provides benefits – actual and intangible – that are valuable, worthwhile and attractive to our members throughout their professional lives.

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AIRAH SUBMISSION

EMISSIONS REDUCTION FUND

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Return BOTH the cover sheet and the comments sheet by email (preferred option) or post to the addresses below.

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AIRAH SUBMISSION

EMISSIONS REDUCTION FUND

Overview

The Australian Institute of Refrigeration, Air Conditioning and Heating welcomes the opportunity to comment on the Emissions Reduction Fund (ERF) Green Paper. We look forward to contributing to the Government's further consultation process about the ERF. Please do not hesitate to contact me if you have any queries about this submission or the comments made.

Yours sincerely,

Phil Wilkinson **MEng M.AIRAH M.IEAust M.ASHRAE**
Chief Executive Officer AIRAH

IN SUMMARY

AIRAH believes that the measurement and verification processes and the ERF "methods" will be critical to the success of the ERF Auction. Methods need to be simple and flexible. Administrative burdens should be low, validation protocols high. This will facilitate aggregation and keep the cost of the emission reductions lower. Auctions need to be open, transparent and equitable.

From an HVAC&R perspective, existing systems, building and facilities provide the richest potential for large-scale low-cost emission reductions. ERF protocols, rules and methods must ensure that the practices of commissioning, recommissioning, retrocommissioning, fine tuning and maintenance for energy efficiency are not excluded from ERF activities and projects. New systems and plant are not always the most cost effective solution for energy efficiency.

There are a range of additional regulatory reforms and actions that should be taken in support of Direct Action and the ERF. Many proposals and initiatives have been developed through PRIME, the HVAC&R industry's blueprint for a successful transition to a low-emissions future through Professionalism, Regulation, Information, Measurement, and Emission abatement. AIRAH has recommended several of the PRIME initiatives within this submission.

http://www.airah.org.au/iMIS15_Prod/AIRAH/PRIME/AIRAH/Navigation/PRIME/PRIME.aspx



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Date:	February 21, 2014

Submission responses



[ISSUE]

AIRAH COMMENTS ON THE SPECIFIC GREEN PAPER “VIEWS SOUGHT” QUESTIONS

Emission reductions can be validated as genuine by establishing approved measurement and verification (M&V) protocols that ERF projects should follow and by supporting the ERF contracts by a rigorous and independent random and targeted verification programme.

Methods for calculating emissions reductions from priority activities should be developed in consultation with the relevant industry sectors. Methods should be performance-based rather than prescriptive; they should be as flexible and simple as practicable. Methods should focus on establishing a BAU benchmark for the facility or activity and then measure and validate the energy savings and emission reductions. The rigour of the validation should be commensurate with the size of emission reduction with large projects being required to use an independent Certified Measurement and Verification Professional (CMVP).

The aggregation of emissions reductions across projects and activities will be facilitated if there are clear and simple protocols established for emission reduction M&V. If the measurement and validation of emission reductions is simple an aggregator will be able to combine reductions across multiple facilities or activities with ease. If the ERF creates a large administration and reporting process for individual activity M&V then aggregators will need to increase the costs of emission reductions to cover these administrative costs. This outcome would be in direct opposition to the fundamental principles of ERF, i.e. leveraging the lowest cost emission reductions.

Simplicity of aggregation is particularly important to ensure that residential premises and small businesses are able to access the ERF without burdensome administrative costs.

Early participation in the ERF would be facilitated if there are clear and simple/well understood industry agreed protocols for validating emission reductions and if the Auction is carried out in a transparent way. Efficient ERF Auctions could be facilitated by:

- Providing an indication of carbon price that may apply prior to the Auction
- Providing adequate notice of the first auction for offers to be prepared
- Providing live bid prices during auction rounds to encourage competition
- Selective targeting of ERF Auction information at likely participants.

Funding certainty could be provided for businesses participating in ERF if:

- Contract terms are extended beyond five years with a provision to deem and pay extended abatement upfront.
- Successful bidders are provided with 50 per cent of ERF funding upfront, with the remaining 50 per cent payable on delivery of abatement instalments.
- Full payment for abatement based on basic energy efficiency measures is made once installation of plant or equipment is verified.



Confidence that projected emissions reductions will be delivered is provided if projects have the opportunity or requirement to make good any shortfalls through the purchase of Australian Carbon Credit Units (international credits should not be allowed). Project proponents should also be subject to due diligence checks and projects must use recognised and verifiable emissions abatement methods to deliver genuine emissions reductions.

The Government should conduct a review of the Emissions Reduction Fund towards the end of 2015 and every year thereafter until 2019. The results of the review and the operational statistics of the fund for that year should be made freely available to potential ERF participants.

The baselines for the safeguard mechanism should be set based on individual facility history, rather than industry best practice. International permits should not be used by companies to meet their baseline requirements. AIRAH supports the trading of ACCUs as part of a safeguard mechanism with an absolute cap on the overall emissions of NGERS liable entities.

AIRAH GENERAL COMMENTS ON THE ERF GREEN PAPER

PRIME

AIRAH has played a lead role in the development of a whole of industry pathway to a low-emissions future called PRIME¹. Many of the following AIRAH recommendations are based on industry proposed and agreed solutions developed through the PRIME initiative.

The ERF methods

The success or failure of the ERF to incentivise lowest cost emission reductions will largely depend on the success or failure of the “activity methods” and “facility methods” used to measure and verify ERF project performance.

If methods can be designed to be flexible and performance based with a broad scope and coverage they will most likely be successful and widely used, this will increase competition and reduce emission costs. If methods are prescriptive and rigid with a strictly defined scope and coverage they will most likely be administratively difficult, be project limiting and a cost burden, which will reduce competition in the ERF auction and raise emission reduction costs.

Government should allow industry to innovate and compete to generate the lowest cost emission reductions. The ‘rules’ contained in individual methods can be minimised if a robust and independent emission reduction validation programme is used to ensure that ERF projects do actually achieve the contracted reductions in emissions. In this way the methods only need to outline the administrators’



expectations for ERF projects and the technical details can be left up to individual experts and companies.

AIRAH supports the position of the Energy Efficiency Council, which allows for methods from white certificate schemes to be used, with withdrawal of these certificates from any state-based scheme when they are successfully auctioned under the ERF. This will also facilitate the aggregation of emissions reductions across projects and activities.

Additionality

AIRAH disagrees with some of the principles proposed by the Green Paper, whereby so called business-as-usual improvements to energy efficiency are not eligible for inclusion in ERF bids. *Existing plant and equipment* for instance are intended to be excluded from ERF bids. This effectively excludes all of the processes of commissioning, recommissioning, retrocommissioning, tuning and energy efficiency focussed maintenance for building HVAC and commercial refrigeration. These processes have been proven to provide significant energy savings, both in Australia and Internationally. These processes tend to be labour intensive rather than capital intensive and focus on improving the operational efficiency of existing systems and plant rather than totally replacing systems and plant. Commissioning, recommissioning, retrocommissioning and energy efficiency focussed maintenance and tuning activities for building HVAC and commercial refrigeration should all be allowable activities under ERF rules. Upgrading and rebuilding existing systems and plant is a significant focus of these activities and should also be allowed. These activities are not business as usual but rather direct energy efficiency interventions.

Regulatory reform

Regulatory reform opportunities that would complement the Emissions Reduction Fund include the review of regulations that deal with the direct emission of ozone depleting and synthetic greenhouse gas refrigerants. It is unclear at this stage if (and how) the ERF could incentivise reductions in direct emissions from refrigeration (and air conditioning) systems. Given the international focus on HFC refrigerant phase down AIRAH recommend that:

- Existing codes and standards covering the quality of construction standards for refrigerant pipework and systems be reviewed and strengthened with regard to reducing refrigerant leakage from systems. (PRIME)
- Australia work with international partners to introduce a rational global phase-down of high GWP refrigerants. (PRIME)
- Australian governments and industry agree a set of design, installation and maintenance protocols to address the issue of refrigerant leakage to apply in the interim period.
- Australian governments and industry agree a national model for licensing refrigerant mechanics and refrigerant handling, for all refrigerants, strongly linked to competency training and skills maintenance. (PRIME)



Other regulatory reforms that should be considered/introduced to support Direct Action and ERF include:

- Tax breaks for energy efficiency maintenance. (PRIME)
- Increased inspection/certification around the application of the minimum building/energy standards of the National Construction Code (NCC) in new buildings and refurbishments. (PRIME)
- The introduction of minimum requirements for the mandatory commissioning of buildings and their services systems into NCC. One of the PRIME solutions is for minimum mandatory building commissioning requirements to be included in the National Construction Code. For new buildings this will optimise HVAC&R energy use. (PRIME)
- Strengthening and broadening the scope of the MEPS scheme (e.g. MEPS for fans and pumps). Tightening of existing MEPS is recommended, along with a widening of the range of equipment to which MEPS applies AIRAH would also urge that more resources be allocated to the enforcement/validation of MEPS claims. (PRIME)
- The introduction of tighter control of electricity supply voltages.
- The introduction of minimum energy performance requirements/standards for new LNG plants.
- Longer-term energy market reform by building a national electricity distribution, storage and voltage management network suited to dispersed decentralised electricity generation and storage.

Government should also consider and address:

- Training opportunities to up skill the HVAC&R workforce. (PRIME)
- R&D incentives to support HVAC&R innovation. (PRIME)
- Community education to change occupant and operator behaviour and understanding of the energy use and direct emissions of HVAC&R systems. (PRIME)

Training

Given the significant changes that are occurring within the HVAC&R fields PRIME has identified significant shortfalls in the coverage and content of current apprentice, technician and engineering professional training and education regimes. All of industry and government need to work collaboratively with educators to ensure that the training, skills and knowledge available at every level is consistent with low-emissions principles, practices and technologies. Course competencies should include “HVAC&R system optimisation and energy efficiency” issues and “system maintenance for energy efficiency” activities as core training subjects and include a focus on the promotion of the “financial benefits of energy efficient systems” by technicians to owners and end users. Resources should also include effective and appropriate use and handling of all alternative low GWP (natural or synthetic) refrigerants.



Large-scale, low-cost emissions reductions

Air conditioning and refrigeration account for 22 per cent of national electricity use and close to 12 per cent of Australia's direct and indirect emissions¹, with heating and ventilation adding to that. There is therefore considerable scope for large-scale, low-cost emissions reduction from HVAC&R through a range of measures.

LNG Plants

Single facilities with the very largest HVAC&R energy users are LNG plants, which are required to cool natural gas down to minus 162°C in order to liquefy it. Approximately 0.4 tonnes of CO₂-e is produced for every tonne of LNG liquefied. It is estimated that there is potential to improve the energy efficiency of robust and simple LNG plants by approximately 30 per cent.² Based on emissions from LNG processing being 25 Mt higher in 2020 than in 2012 (as shown in figure 1.4 of the ERF Green Paper), improved efficiency could provide savings of perhaps 5 MT in 2020, or around 15 MT cumulatively to 2020. This is a very large emissions reduction from a single measure, and should be supported by the ERF or by regulation to set minimum energy performance standards and to verify that they are achieved.

AIRAH's membership has suitable expertise in cryogenic refrigeration to make a valuable contribution to more energy efficient LNG plant design.

Large HVAC&R

Large food processing plants such as abattoirs and large cold storage facilities, along with high rise office towers are large HVAC&R energy users. New plants are generally substantially more efficient than older plants, as equipment efficiencies have improved. There does, however, often exist substantial optimisation opportunities in existing equipment.

Custom designed and built refrigeration is typically used in large industrial refrigeration plant. For new plant, or upgrades to existing plant, there is a significant energy saving opportunity from optimised design. This, however, can come at a cost premium – for example a highly efficient plant will have larger condensers, which require more material and labour to manufacture. The ERF could incentivise more energy efficient large refrigeration plant by rewarding performance over and above a threshold level. Thresholds could be set for both chilling plant (cooling above the freezing point of water) and refrigeration plant (typically freezing down to minus 20°C for food).

In large refrigeration plant, as well as with the HVAC systems used in large commercial buildings, there is often substantial energy savings opportunity from the optimisation of existing controls.

Annual HVAC energy efficiency tune-ups are also recommended in the PRIME strategy. The same could

¹ The Cold Hard Facts report published by DSEWPAC in 2013 ([Cold Hard Facts 2013 PDF](#))

² Improving energy Efficiency of LNG Plants, Thomas C. & Chretien, D., Total E&P – LNG Group, 2008.
<http://www.igu.org/html/wgc2009/papers/docs/wgcFinal00845.pdf>



apply to large refrigeration plant.

The ERF could incentivise the optimisation of controls for large HVAC&R installations by allowing for the generation of Australian Carbon Credit Units (ACCUs) based on robust measurement and verification (M&V) of savings achieved by optimisation. These would likely need to be aggregated to meet auction thresholds.

The Energy Efficiency Council (EEC) has recommended that methods used in state based white certificate schemes be eligible for the creation of ACCUs, on the proviso that these were withdrawn from any state based white certificate scheme they may be eligible for. AIRAH supports this proposal, and the NSW Energy Saver Scheme metered baseline method would allow for savings generated from the optimisation of large HVAC&R plants to fulfil this. Certificate traders could then aggregate these for auction under the ERF.

The extent to which the ERF would stimulate this however, will be highly dependent on the price of ACCUs, and the time and administrative resources required to ensure compliance with the methods that would need to be followed to generate the certificates. The extent of the likely carbon savings is difficult to estimate, a guesstimate would be 2MT/year with a strong incentive.

Finance

HVAC&R upgrades are typically capital intensive. Regulatory reform that enables easier access to energy efficiency financing, such as that facilitated by Low Carbon Australia, is encouraged. Environmental Upgrade Agreements, as pioneered by the Sustainable Melbourne Fund, are one such mechanism.

Where there is high certainty of savings being achieved (as there typically is with the replacement of old equipment) and building owners can get easily access to financing, and an additional incentive via certificates can be achieved without a great deal of paperwork, there is a much greater likelihood that the full potential for HVAC&R savings can be achieved.

Small HVAC&R

Small HVAC&R equipment is widely dispersed, and ranges from the refrigerator in every home in Australia through to the packaged air conditioning equipment often used in mid-sized office buildings. New equipment is typically substantially more efficient than older equipment – for example a high efficiency split system air conditioner could use as little as $\frac{1}{3}$ the energy of a “window rattler” air conditioner that it replaces.

Regulation to support the ongoing tightening of Minimum Energy Performance Standards (MEPS) through the national Equipment Energy Efficiency (EEE) program is recommended, and also the gradual widening of the scope of the scheme to include additional types of equipment. (PRIME)

The replacement of old equipment with new more energy efficient equipment could also be supported through methods based on white certificate schemes. This approach is industry endorsed through the PRIME initiative. This could also help in the phase out of low-efficiency systems that use refrigerants with high global warming potential. End of life protocols need to be in place to ensure refrigerant recovery. (PRIME)



Refrigerants

The phase-out of the refrigerants R12 and R22 have often not meant the replacement of the old equipment using these refrigerants, but rather the use of “drop in” replacement refrigerants. A significant energy efficiency opportunity is thus missed, as new high efficiency equipment can be more than twice as efficient. Regulation that stipulates the mandatory replacement of HVAC&R equipment originally designed for use with R12 or R22 that was built before 1990, over say a five-year period, and which also allows the creation of tradeable certificates from this replacement, would deliver a reduction in electricity use and associated direct emissions.

Natural refrigerants such as CO₂ have very low global warming potentials. There has not, however, been wide take up of these refrigerants. In the case of CO₂ this is often because of a lack of skills. It is a chicken and egg situation, a reasonable number of installations are necessary to get the skills level up. Packaged CO₂ units are, however, becoming more prevalent, and regulation could support the further use of these systems.

ⁱ PRIME – a whole of industry pathway to a low emissions future. See http://www.airah.org.au/iMIS15_Prod/AIRAH/PRIME/AIRAH/Navigation/PRIME/PRIME.aspx