

TO: DEPARTMENTS OF EDUCATION AND INDUSTRY

04112014

RE: BOOSTING COMMERCIAL RETURNS FROM RESEARCH

Dear Review Team,

This is to provide a quick comment on the research needs and process you have described in your request for submissions.

In providing this comment I want to start by recognising our agreement with the central thrust of the report. In our view it can be taken as a statement of fact that Australia has excellent research capability and a high level of entrepreneurship. There are however three vital gaps in Australia's innovation capability: 1) the relationship between researchers and industry and 2) ineffective commercialisation of high potential inventions 3) lack of HVACR research capability. All three need to be addressed in the manner you suggest but recognising the unique needs and benefits of the HVACR industry.

The following comments seek to build on the thinking you have provided from a Refrigeration and Air Conditioning POV. In our view it is important that a pathway for HVACR research be considered.

Please note at least four if not all of the target industries you have selected are major users of HVACR: *"The Initiative will focus on growth sectors within the Industry Portfolio: (1) food and agribusiness, (2) mining equipment, technology and services, (3) oil, gas and energy resources, (4) medical technologies and pharmaceuticals, and (5) advanced manufacturing"*.

The first four are directly dependent in HVACR and arguably the last would serve the HVACR industry.

More importantly the national interest served by the HVACR industry applies in virtually all sectors of the economy. We believe it is highly likely that the HVACR industry will reduce its energy consumption and operating cost by over \$10B PA (in current \$) within the next tens years. This can be done well or poorly. Done well it will happen faster and more efficiently making a major contribution to Australia's competitive advantage. Done poorly and it will take far longer and undershoot the opportunity and therefore undermine our competitive effectiveness.

Research has a major role to play in the success of this transition.

The Transition

The HVACR industry worldwide will transition from low efficiency / high cost to high efficiency / low cost by transitioning to Low Global Warming refrigerant based technology and integrated energy efficiency management. This is a major shift in HVACR technology that will see the vast majority of HVACR infrastructure in Australia, worth about \$100B in current \$, replaced in the next ten years. Whilst the international agreements pertaining to HVACR are couched in global warming terms the fact is that Low GWP refrigerants are dramatically more energy efficient. Australia is a signatory to the Climate and Clean Air Coalition that calls for the phase down of HFC refrigerants that are energy inefficient. This development is inevitable because it is commercially warranted (regardless of the global warming impact).

However, far more can and needs to be done to maximise the benefit of HVACR energy efficiency. The integration of efficient vapour compression systems with the many other sources of energy efficiency that are basically about better energy management and better heat loads reduction will deliver the desired outcome. I have attached a presentation I will give at the Energy Efficiency Council Conference that highlights Australia's research needs in the Refrigeration and Air Conditioning industry (HVACR) and emphasises the need for integrated design and management.

It is important to recognise that this transition will be and needs to be delivered in the many sectors of the HVACR industry; Domestic, Commercial, Industrial, Transport : refrigeration, air conditioning, heating, ventilation and heat load management. Each sector has unique characteristics that call for unique solutions. Research is required across the full range to demonstrate and validate the benefits claimed by innovators.

There are two fundamental roles for HVACR research:

1. Enabling Australian HVACR inventors to develop and validate their inventions
2. Enabling HVACR technology importers to adjust and validate overseas technology for use in Australia

The Current HVACR Research Capability

The research capability available in Australia is limited and declining. CSIRO has reduced its presence in the field and shut down a world class research capability previously located at North Ryde NSW. The remaining research capability is not coordinated or focussed on Australia's HVACR research needs.

Australia has world-class HVACR engineering capabilities. Our association has gathered over 20 companies that have high potential but lack the research capabilities and funding to demonstrate and validate their technologies.

Conclusions

I am asking you to engage with the ARA to appreciate the significant economic benefits that will flow from better HVACR technology and require far greater research engagement.