



ARENA

Australian Government
Australian Renewable
Energy Agency

Heat Pump Technology Selection Guide

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Sponsored by:



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Member & partner organisations



Agenda



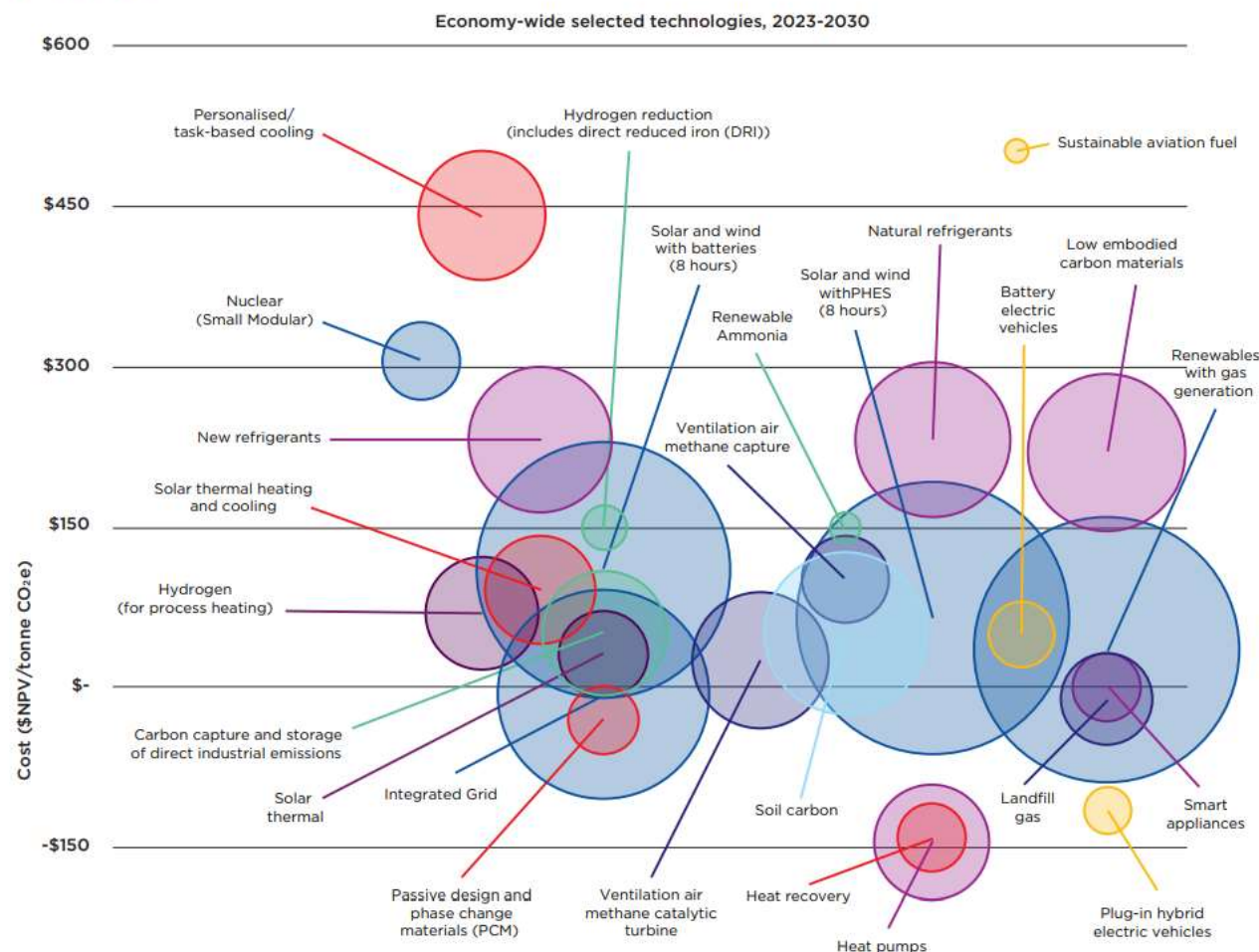
- 3:30 **Welcome**
 - Jarrod Leak, A2EP
- 3:35 **The heat pump opportunity in Australia**
 - Jarrod Leak, A2EP
 - Peter Haenke, ARENA
 - Rob Nicholson, pitt&sherry
- 3:50 **Heat pump selection guide**
 - Manuel Siegrist,
 - Derek Harbison
 - Charles Luo
- 4:50 **A2EP: Forthcoming briefings, membership, collaboration**
 - Jarrod Leak, A2EP
- 4:55 **Wrap and close**
 - Jarrod Leak, A2EP

Heat pump potential

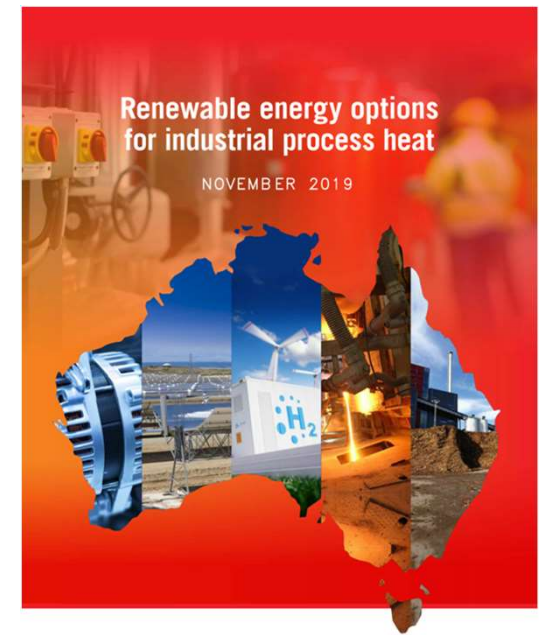
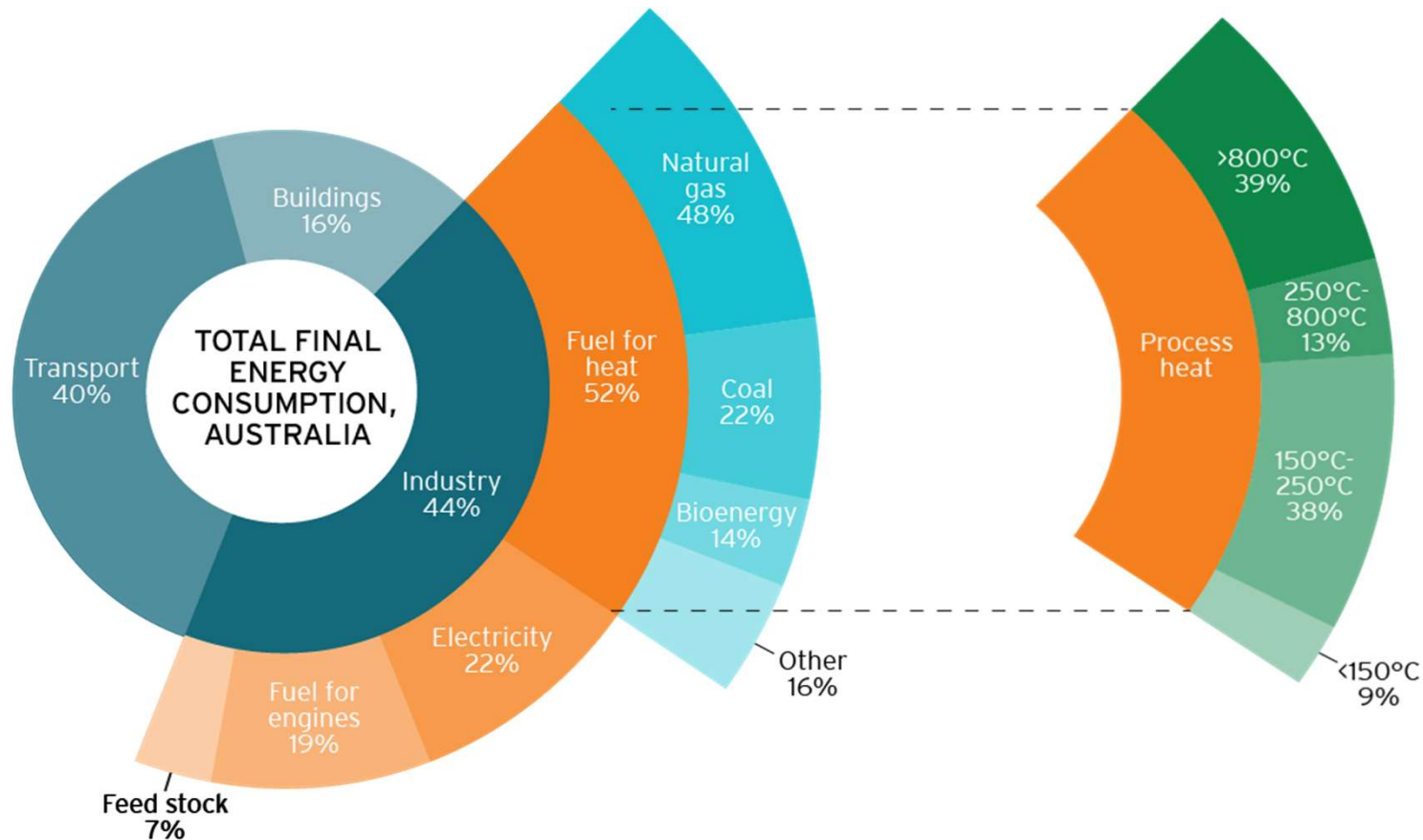
- Heat pumps did not make the 'top 5' for technology priorities, however, half of the potential for the technology is not well documented – i.e. industrial heat pumps



Figure 4: Summary of selected technologies with the potential to reduce emissions across the economy, 2023-2030



Industrial process heat - a large energy user

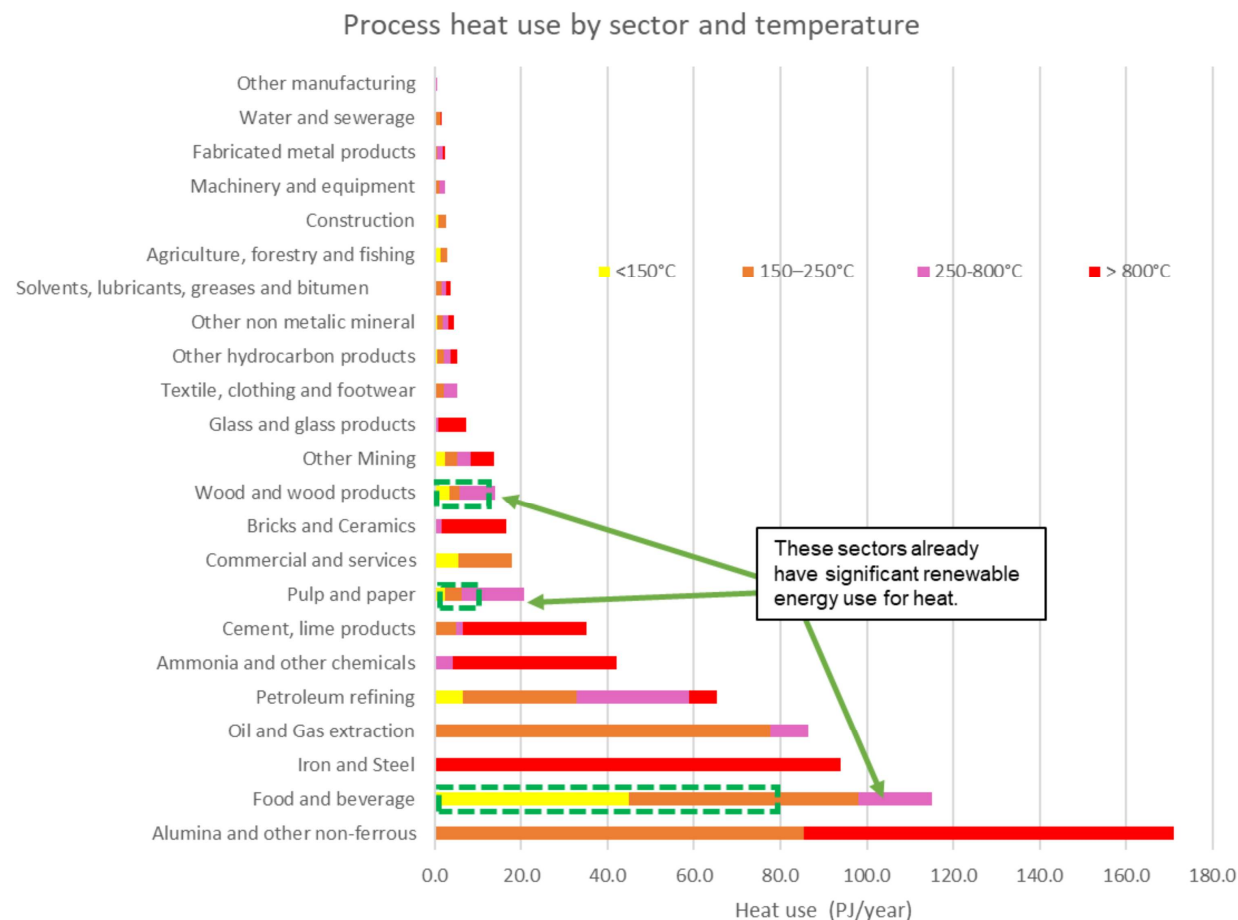


Source: ITP et al 2019, Renewable energy options for industrial process heat

Industrial process heat – low temperature heating



- If all industrial heating below 90°C will be done with heat pumps, this could be up to 65PJ of heating
- It is possible that this amount of heating will required 4GW of installed capacity requiring investment of more than AU\$2B*



* A2EP estimate using various results from process heat studies

Heat pump drivers

- Net zero commitments are increasing and heat pumps can displace gas usage for low temperature heating ($<100^{\circ}\text{C}$)
- Electricity prices continue to fall whilst future gas price uncertainty remains
- Heat pumps allow you to be rewarded for negative price events when combined with thermal storage



Heat pump potential: 3 generic cases



- **Abattoirs** – more than 100 abattoirs retrofitted with heat pumps for washdowns and sterilisation giving a potential saving of ~1,600,000 GJ pa
- **Dairy farms** – more than 5,700 farms could be retrofitted to use PV and heat pumps (not domestic hot water versions!) with a potential saving of ~300,000GJ pa
- **Aquatic centres** – more than 300 medium to large aquatic centres/water parks could be retrofitted with heat pumps giving a potential saving of ~500,000GJ pa of natural gas



Heat pump – specific studies

How to make a case for a heat pump?



A2EP process heat studies showed a large variation in the selection and integration methods for heat pumps

- What refrigerant should I use?
- When do I use ammonia, when CO2 or other?
- How do I improve the economics of heat pumps?
- What size should be selected?
- How can I use thermal storage?
- How do I optimise performance?

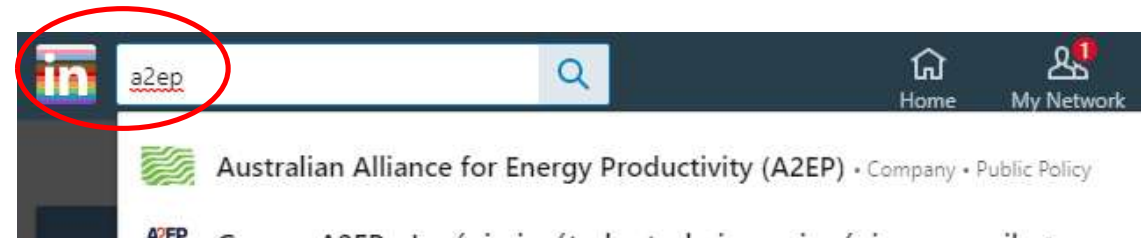
More events from A2EP



- **A2EP Energy Innovation Network Meeting**
Technology focus: Metering and measurement
Thursday 15 October
- **A2EP Energy Innovation X-Change 2020**
Virtual event on innovation to get EP investment
moving9 - 12 November
- **Sydney Regional Councils**
Optimising Energy Use at Aquatic Centres
Tuesday 17 November (closed session)



Want more? 3 steps to more A2EP



Further Q&A

