

Australian Government

Australian Greenhouse Office

Laboratory to Marketplace - Practical Research and Policy Analysis in Australia

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Australian Greenhouse Office

AUSTRALIA

- Australia is a federation of 6 States and 2 Territories with 20 million people
- Energy efficiency is a core element of the National Greenhouse Strategy
- Energy efficiency regulation is a State and Territory matter, and Mutual Recognition Arrangements require national consistency



AUSTRALIAN GREENHOUSE OFFICE

- World's first national agency dedicated to climate change
- AGO manages energy efficiency by coordinating nationally consistent product energy end-use standards and labels through State laws under National Appliance and Equipment Energy Efficiency Program (NAEEEP)
- Regulations rely on technical detail for products to be set out in Australian Standards, with Standards called up by State laws.



National Appliance and Equipment Energy Efficiency Program

- 1998 National Greenhouse Strategy re-affirmed joint program established in 1992
- Appliance labelling began in two largest States (NSW/Victoria) on voluntary basis in mid-1980s
- National energy rating labels from 1992
- Introduction on minimum energy performance standards from 1999



National Appliance and Equipment Energy Efficiency Program

- Presentation on policy research for energy efficiency regulation (MEPS) of refrigerators, airconditioners, and electric storage hot water
- Work undertaken by consultants: Lloyd Harrington, Professors of Engineering at UNSW, and the staff of accredited checktesting laboratories (the real world)
- MEPS testing and compliance monitoring should not impose undue technical or cost barriers



Refrigerator MEPS

- Initial refrigerator MEPS level in 1999 weak
- Began dialogue with industry in 2000 on policy agreed in 1999 by Ministerial Council of Energy of matching world's best regulatory practice
- Following a review of overseas practices, the goal became alignment with US 2001 standard
- Needed to determine “equivalent” MEPS levels to US 2001, but using AS/NZ method



Refrigerator MEPS

- Commissioned tests on 9 refrigerator-freezers
- 3 units sourced directly from US (115V, 60Hz)
- Wide range of tests at accredited laboratory: US DOE (CFR430), AS/NZ4474, ISO8561 plus a range of exploratory tests
- Also imported US laboratory engineer to reassure Australian industry observers on US tests
- Some simple modelling also undertaken (generally agreed with tests to within few percent)



Refrigerator MEPS

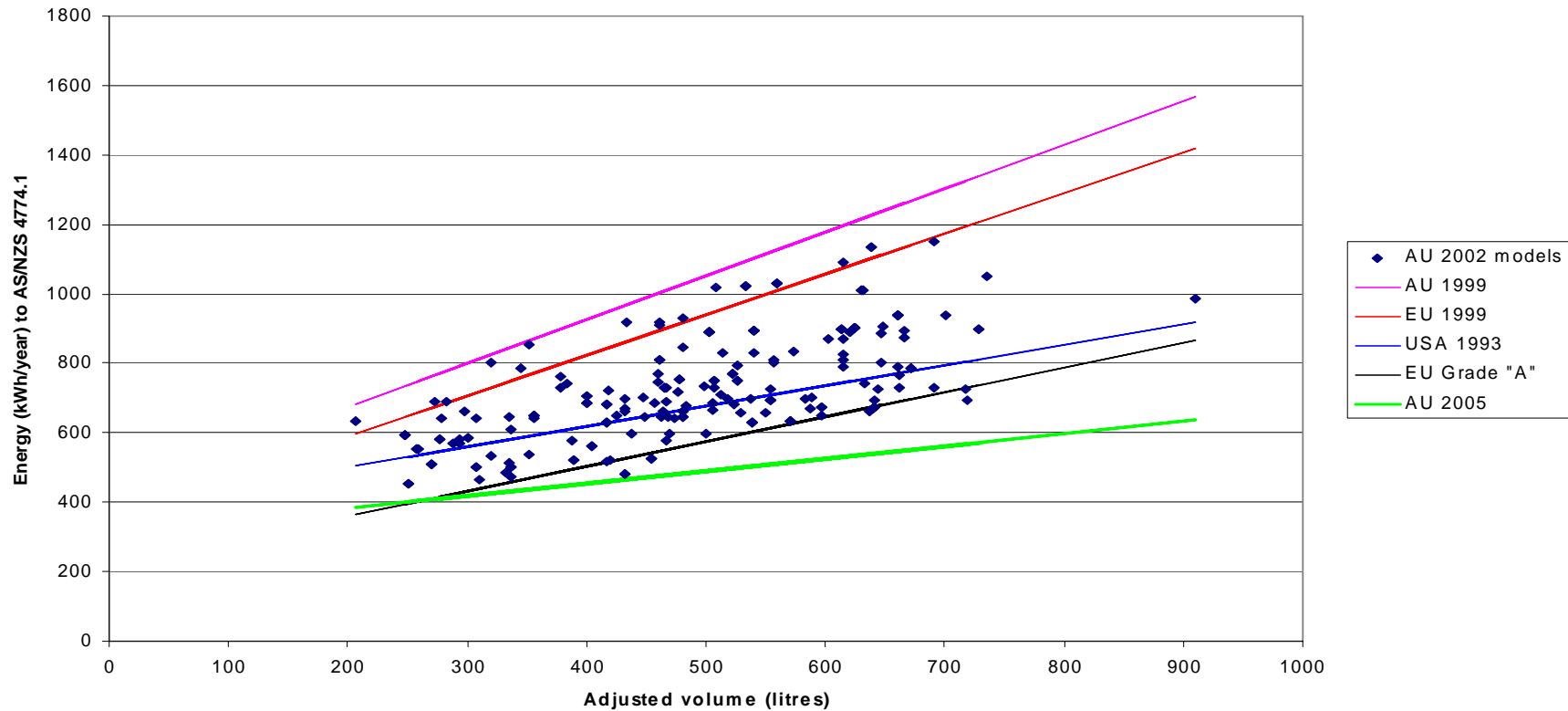
OUTCOMES

- Technical issues and recommendations published (Harrington, ECEEE 2001) with ideas for a better test method
- Agreement on single global test method would facilitate trade
- Australian industry was convinced that US refrigerators were just like Australian refrigerators
- New MEPS level from January 2005

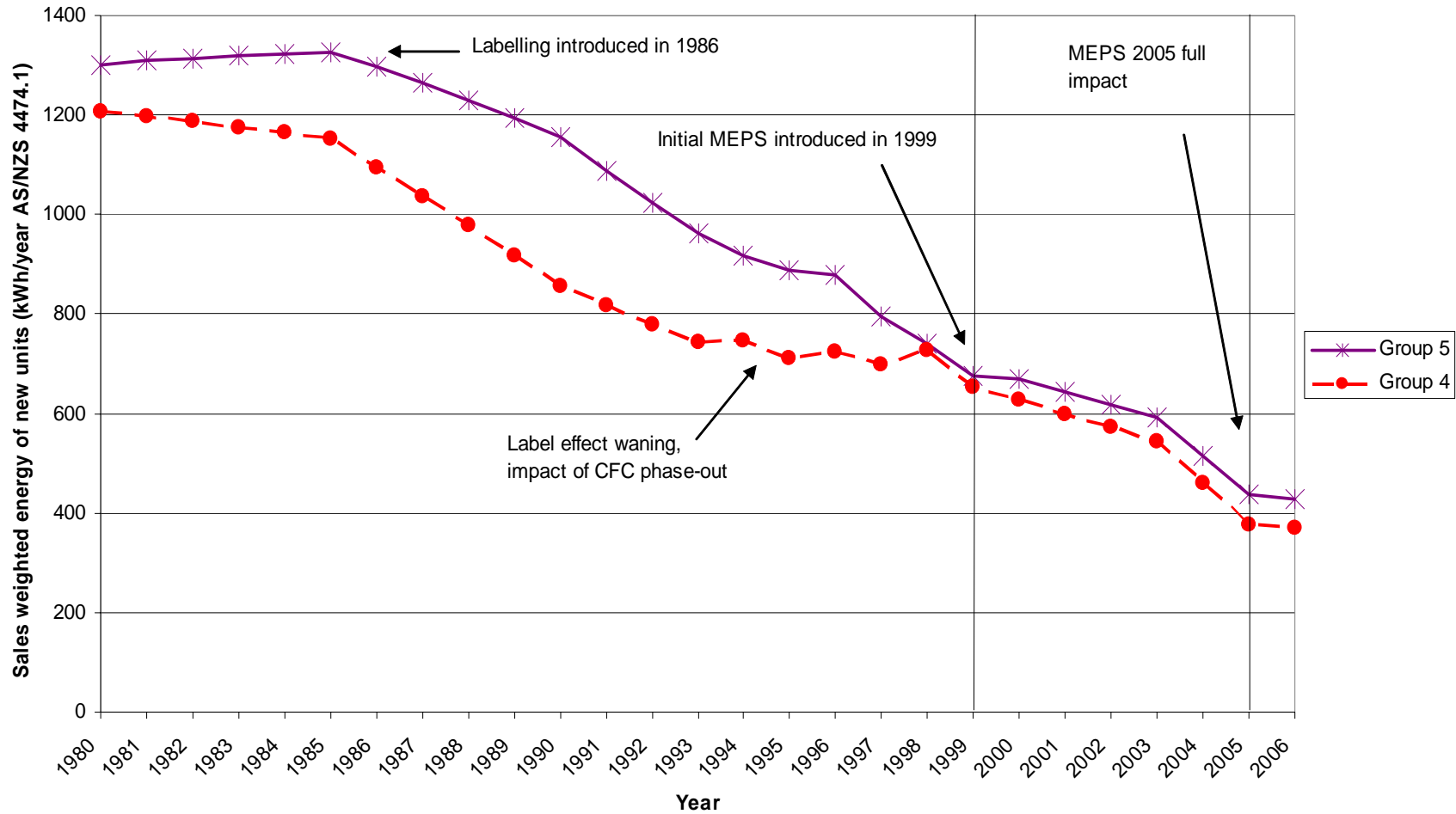


Domestic Refrigeration

International Comparison - Group 5: Frost Free Refrigerator-Freezers



Domestic Refrigeration



Airconditioner MEPS

- Part 3 of AS/NZS3823 allows manufacturers to simulate performance of airconditioners in lieu of laboratory tests (3-phase <65kW)
- Provides greater flexibility and lower costs for manufacturers and reduces compliance costs
- Simulation must meet specific requirements and ORNL software is recognised as appropriate
- User-friendly (HPRate) interface developed in Australia



Airconditioner MEPS

- Though simulation is powerful tool, it has limitations:
 - Number of refrigerants is still limited
 - Simulation of variable speed drives is possible but complicated
 - Not possible to simulate when thermal interaction between evaporator and/or condenser and/or compressor
 - Simulation inputs are idealised values for component performance but actual components are less than ideal
- Physical testing takes precedence for compliance purposes (checktesting)



HPRate Comparative Results

Cooling Capacity Test	Unit A	Unit D
Rated Value	15.1	17.018
Tested Cooling Capacity	11.45	15.08
HP Rate using Mechlab Data	11.45	15.63
HP Rate using Manufacturers Data	13.87	17.02



Electric Storage Hot Water MEPS

- Introduction of MEPS by Australia in 1999 (AS 1056.1:1991)
- Introduction of MEPS by New Zealand in 2002 (NZS 4606:1989) at a more stringent level based on previous decisions
- Trans Tasman Mutual Recognition Arrangement (TTMRA) legislated by both countries and all States and Territories in 1998 so that if product sold in any jurisdiction can be sold in all (encourages free trade)
- Issue – immediate regulatory conflict



Electric Storage Hot Water MEPS

- What differences (if any) exist between the performance results obtained using various standards?
- MEPS relates to standing losses so accurate measurements are needed
- Proposed joint standard AS/NZS 1056.1:2002 (to help resolve TTMRA issues)
- 9 units tested (4 Australia, 3 New Zealand, 2 US)
- Result - over \$A100,000 spent and 3 years of work will give better joint standard by the end of 2003



Electric Storage Hot Water MEPS

- Practical differences are small between AS and NZS and energy impact understood
- New A/NZ standard uses best elements of both tests
- Tests have confirmed importance of corrections for various factors
- Data at small time intervals (1 min) important for accuracy (e.g. temperature drift is flaw in AS1056)
- Test procedure needs to be robust and reproducible in every test laboratory
- Way forward on TTMRA has been found



Electric Storage Hot Water MEPS



Energy
Efficient
Strategies



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Electric Storage Hot Water MEPS

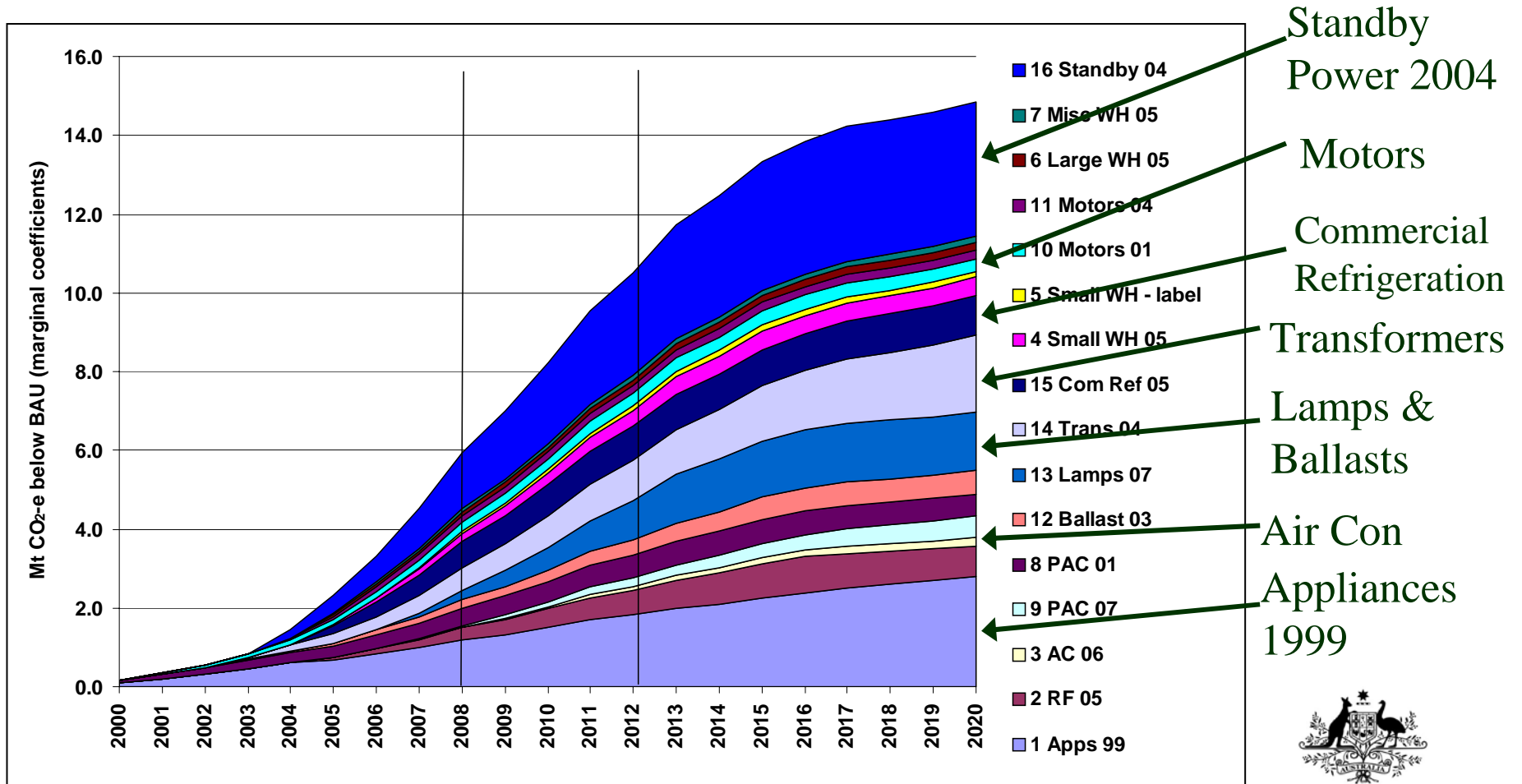


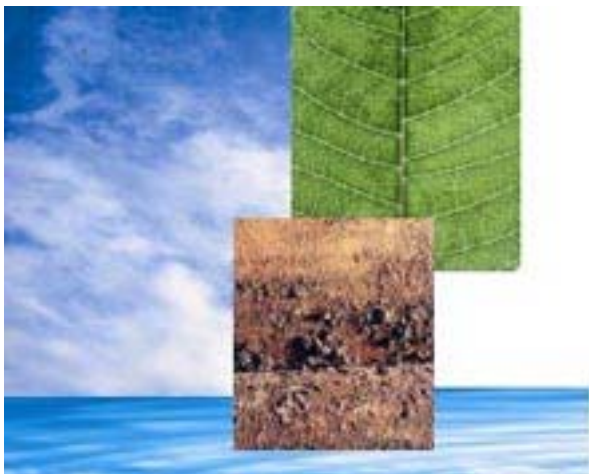
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Projected CO2 Impact of NAEEEP





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Thank you

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