



IEA Energy Efficiency In Emerging Economies Training Week

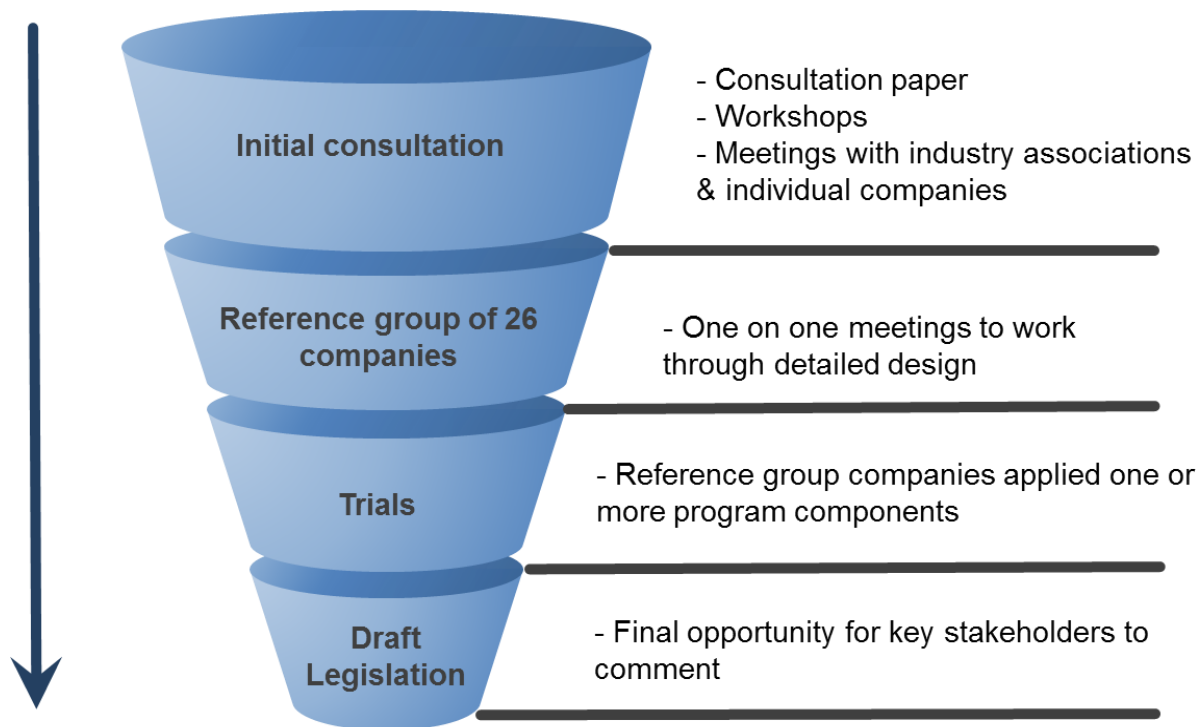
Industry Stream: The Australian Energy Efficiency Opportunities Programme

Louise Vickery, Jakarta, 16-20 July 2018

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- Announced in June 2004, Energy White Paper
- Commenced in July 2006, operated until 2014
- Built on previous voluntary programs
- 18 month industry consultation (2004-05)
- Objective of EEO program was to:

Improve the identification and evaluation of energy efficiency opportunities by large energy-using corporations and, as a result, encourage implementation of cost-effective energy efficiency opportunities.



- Asked for company input right from the start rather than have them review draft guidelines. Key questions were:
 - what has worked well in your business in the past?
 - would would help you to progress energy efficiency in future?
- Consulted with company personnel that had operational experience rather than managers in charge of government relations. This ensured we received practical input from experienced managers with an interest in progressing energy efficiency.
- Trials generated case studies and testimonials for each sector. This demonstrated the benefits to other businesses.

The energy efficiency perspective hasn't only been about ancillary energy savings. We've been able to identify projects with significant production benefits as well. ...Already we know the business benefits are significant.

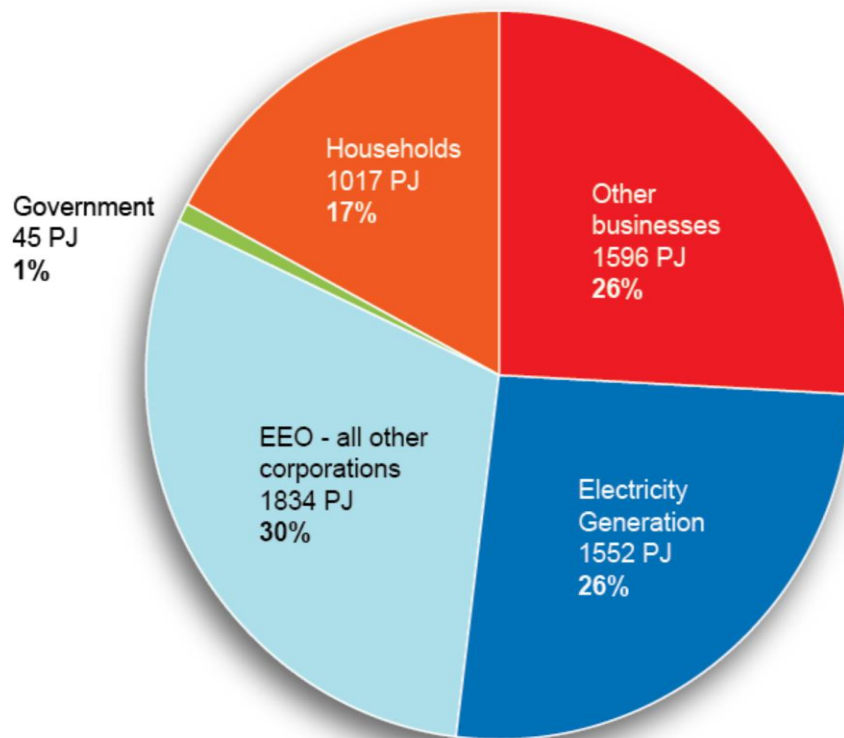
Greg Smith, General Manager Operations, Midland Brick



Energy Efficiency Coordinator, Nigel Hogarth (right) and Kilns Supervisor, Mike Robson, discussing the Midland Brick kiln door project.

- Responsibility needs to be with the company not the energy auditor
 - Energy audit programme findings not adopted
- Need buy-in from company executives and links to core business concerns
- Process should build-on and enhance existing business improvement systems
- Energy Management Systems are necessary to manage implementation, but do not necessarily compel action or identify large energy savings.
- Stretch goals and systems approach to data analysis (energy material flows & balance) identify larger savings; regression analysis useful for multiple sites.

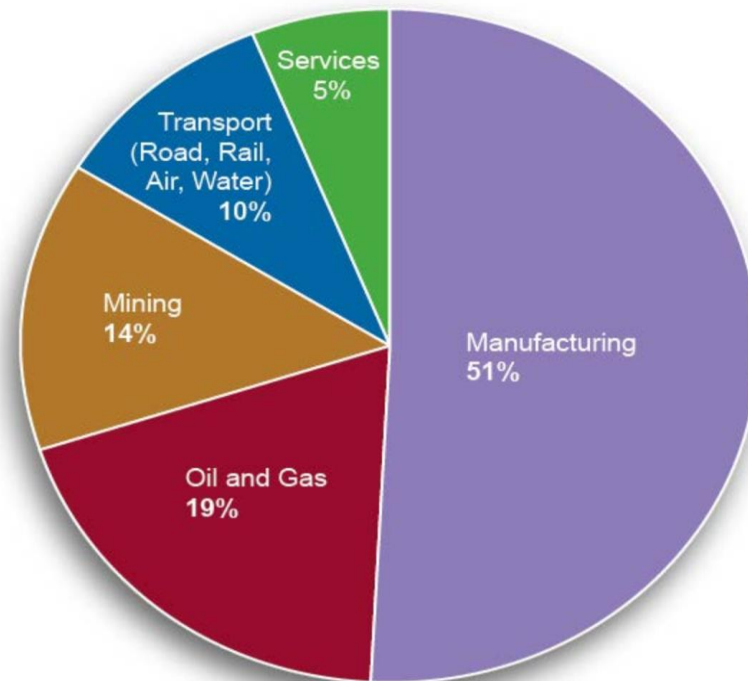
Figure 2. Energy use of EEO reporting corporations as a proportion of total energy use in Australia, 2010–11.



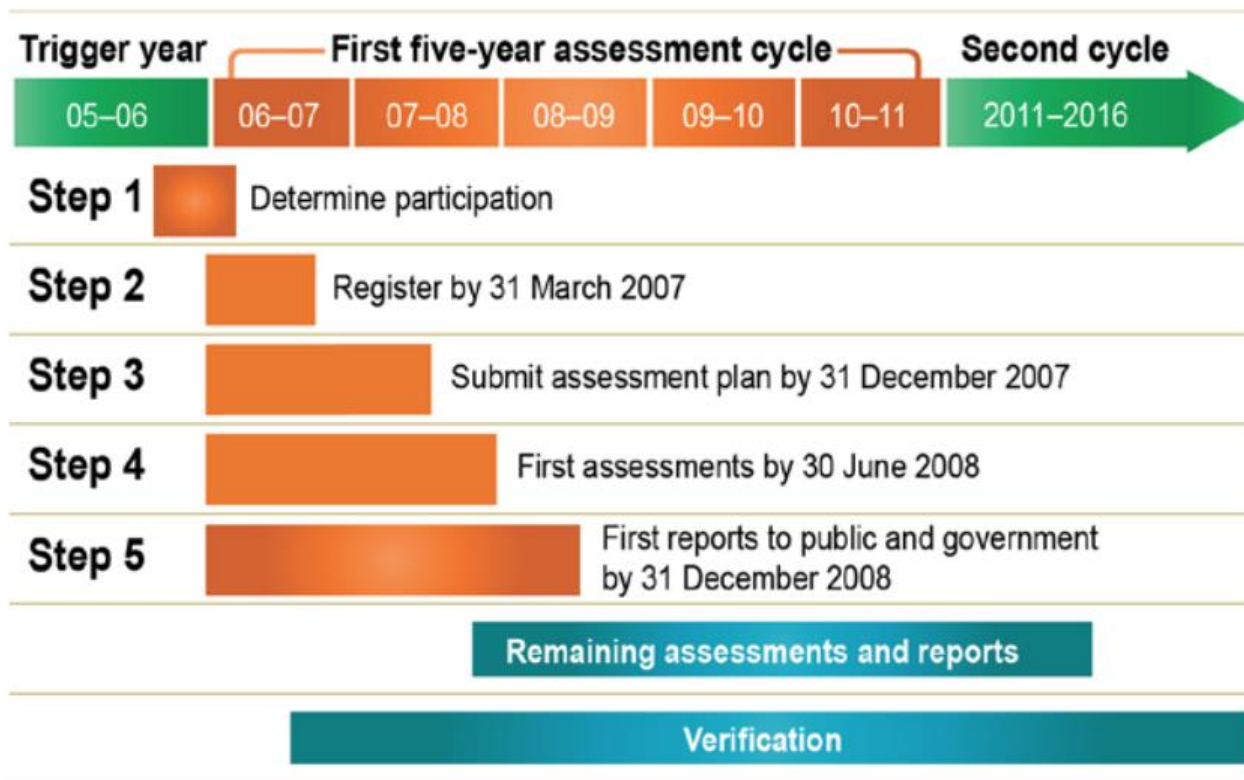
- Participation mandatory for corporations that used more than 0.5 PJ per financial year
 - Assess energy use and identify savings < 4 year payback
 - Public report on savings identified and implemented
- 252 corporations in the mining, manufacturing, commercial, services, transport sectors. 30% energy use / 45% end use
- Electricity generation from July 2011
- 56 % of Australia's energy use from 2011
- Greenfield and New Developments from 2012

- Aluminium, steel, cement
- Food and beverage
- Airlines, rail and trucking
- Mining, quarries and processing
- Construction, Telecommunications
- Banks, Hotels, Supermarkets
- Gas, Oil, Chemical and Pulp Paper

Figure 3. Participants' energy use by industry sector 2010–11.



A step by step approach



Rigorous and Comprehensive
Assessments



Leadership

People

Information, Data & Analysis

Opportunity Identification & Evaluation

Decision Making

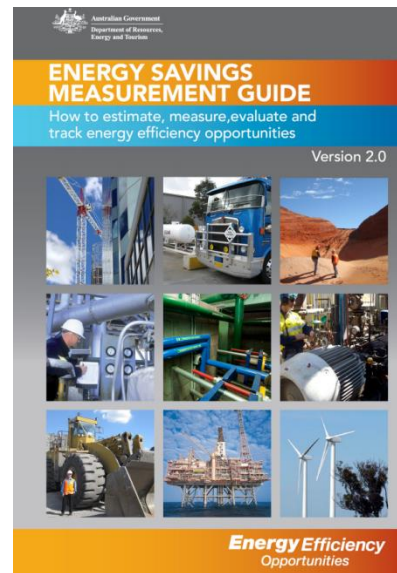
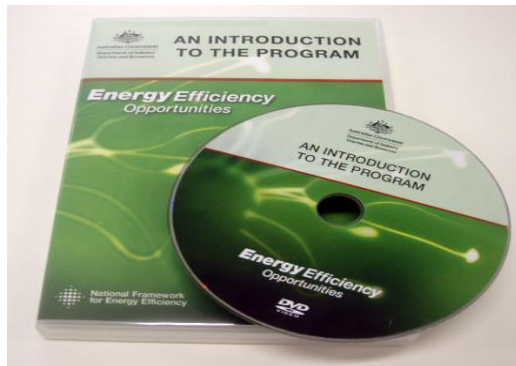
Communicating outcomes

SIX REQUIREMENTS



Companies were provided with a lot of support

- Guidance materials
 - DVDs, handbooks, how-to guides, case studies
- Dedicated points of contact within Government Department
- Annual workshops in every state
 - Update new participants on program requirements
 - Share lessons by industry
 - 500 attendees



Reporting was an important program component



- Annual public reports, published on company website
- 2 Government reports every 5 years
- Data reported included:
 - Opportunities identified (number, energy savings, payback)
 - business response (implemented, not implemented etc.)
 - Savings by energy type (electricity, gas etc.)
 - Example opportunities
- Board review and note results and information to be published



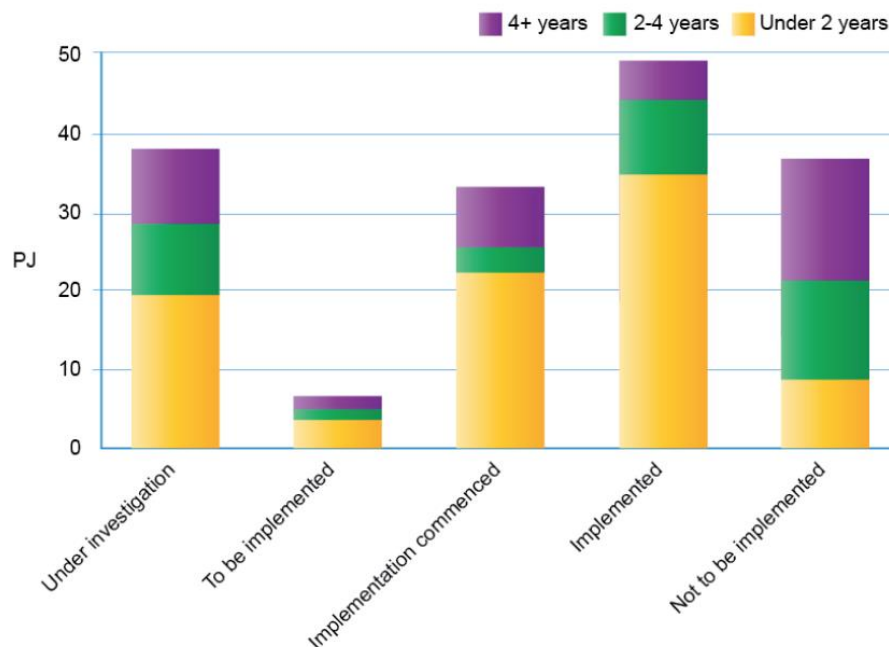
Results after 5 Years by Sector

Table 2. Identified energy savings by industry sector as a share of participants' total energy use, savings and assessed energy use.

Industry sector	Energy savings identified (PJ)	Share of total energy savings (%)	Savings as a % of total sector energy use	Savings as a % of assessed energy use
Manufacturing	68.7	42%	7%	8%
Oil and gas	52.3	32%	15%	17%
Mining	19.5	12%	7%	9%
Transport	16.3	10%	9%	10%
Services	7.5	5%	7%	10%
All sectors	164.2	100%	9%	10%

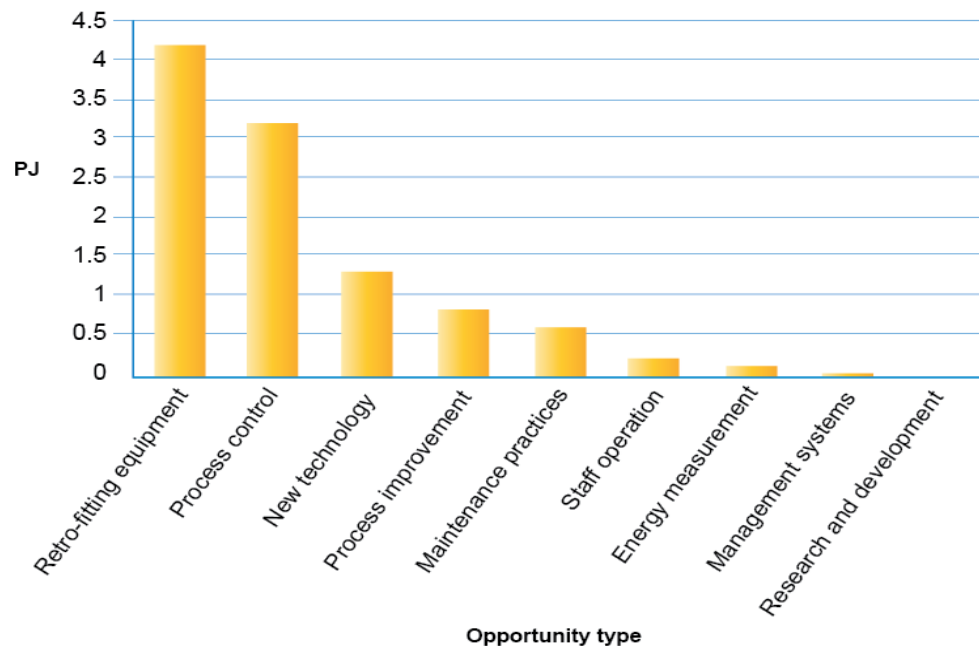
Data from reports was a valuable resource

Identified energy savings by business response and payback period, 2006-11



Corporations reported that over half of the identified savings occurred in projects that had a less than two-year payback. 68% of these savings, were in projects that had been adopted.

Adopted energy savings by opportunity type, 2006-11



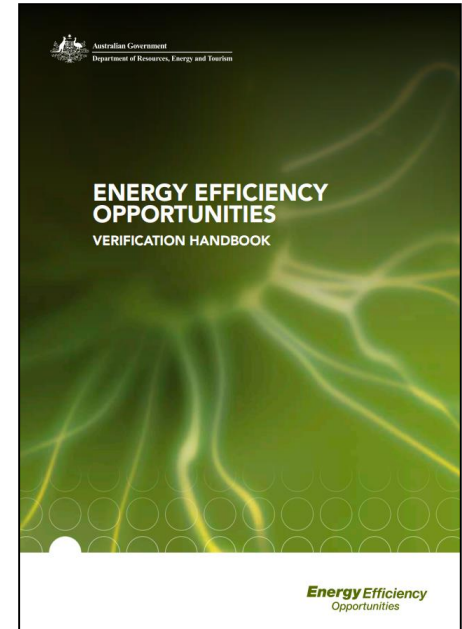
Industry marginal
abatement curves



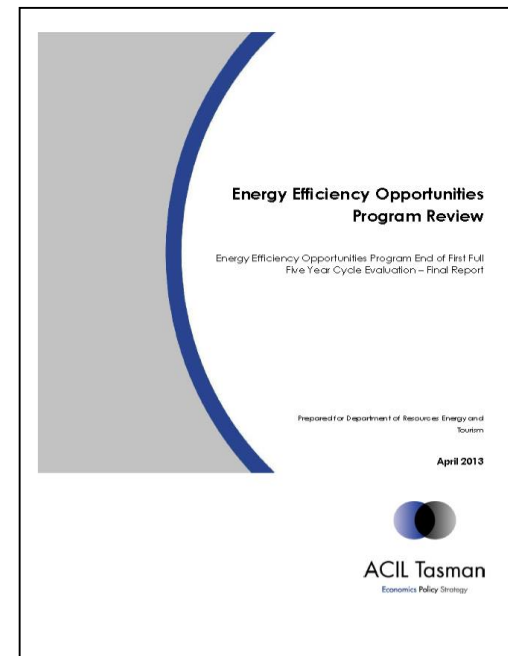
Equipment retrofits, particularly VSDs on electric motors and improvements to process control, were the most commonly report energy efficiency opportunities

Monitoring, verification and enforcement

- Ongoing compliance checks through annual reports.
- Desktop verification (100 per year):
 - Company survey
 - Risk rating for company
- Full verification:
 - Selected based on desktop review
 - Site visit and full day interview
 - Checking compliance against all components of EEO Assessment Framework
 - Verification report prepared and recommendations made
- Penalties could be applied for serious non-compliance.



- Legislated requirement for the EEO Program to be evaluated against objectives.
 - Mid-term review and end-of-cycle review
- Undertaken by independent third party
- Used data reported by participating companies and surveys
- Recommendations to improve program administration



Evaluation findings were very positive

- The EEO Program:
 - Was **effective**
 - Was **additional** - responsible for approximately 40 per cent of the energy efficiency improvements in the Australian industrial sector
 - Was **complementary** to a carbon price
 - Was an **appropriate** policy for addressing market failure

Benefits and costs at the end of the first EEO Program cycle

Cumulative energy savings per year	Cumulative emissions reductions (unadjusted)	Cumulative administration costs	Cumulative assessment / implementation cost	Cumulative private sector financial savings	Financial return ratio
(PJ)	(tonnes CO ₂ -e)	(\$)	(\$)	(\$)	(total cumulative financial benefit /total cumulative cost)
88.8	26,364,000	18,950,000	914,514,376	3,531,614,376	3.67

- Requirement or incentive to look for energy savings or achieve target
 - Energy efficiency important not urgent
 - Tax avoidance, recognition, regulation
- Engagement of the industrial sector in shaping the programme and building capacity
 - Facilitate information sharing and capacity building – data analytics, AI, sensors, smart meters, renewable and DR, new equipment – heat pumps, IoT
- Incentive to implement savings greater than 18 month paybacks
 - Public companies won't borrow for energy cost reduction
- Energy saving opportunity > 18 month payback - needs to improve productivity & generate a revenue stream to be implemented.
 - White certificate scheme – metered process improvement, payment for energy savings to reduce energy infrastructure costs, revolving fund (tax / grid charge used for project implementation).



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