IEA Energy Efficiency In Emerging Economies Training Week

Industry Stream: The Australian Energy Efficiency Opportunities Programme

Louise Vickery, Jakarta, 16-20 July 2018

#energyefficientworld
Energy Efficiency Opportunities (EEO) program

- 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.*
EEO stakeholder consultation process

- Consultation paper
- Workshops
- Meetings with industry associations & individual companies

- Trials
- One on one meetings to work through detailed design
- Reference group companies applied one or more program components

- Draft Legislation
- Final opportunity for key stakeholders to comment
EEO stakeholder consultation process – success factors

• 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?
  - what 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.
Genuine engagement through trials and workshops generate testimonials

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
Program design based on lessons from past programs

- 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.
Mandatory participation ensured strong coverage

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

- 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
Broad range of companies and energy use

- 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

Trigger year: 05–06
First five-year assessment cycle:
- 06–07
- 07–08
- 08–09
- 09–10
- 10–11

Step 1: Determine participation
Step 2: Register by 31 March 2007
Step 3: Submit assessment plan by 31 December 2007
Step 4: First assessments by 30 June 2008
Step 5: First reports to public and government by 31 December 2008

Remaining assessments and reports
Verification
Program based on the EEO Assessment Framework

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.

<table>
<thead>
<tr>
<th>Industry sector</th>
<th>Energy savings identified (PJ)</th>
<th>Share of total energy savings (%)</th>
<th>Savings as a % of total sector energy use</th>
<th>Savings as a % of assessed energy use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>68.7</td>
<td>42%</td>
<td>7%</td>
<td>8%</td>
</tr>
<tr>
<td>Oil and gas</td>
<td>52.3</td>
<td>32%</td>
<td>15%</td>
<td>17%</td>
</tr>
<tr>
<td>Mining</td>
<td>19.5</td>
<td>12%</td>
<td>7%</td>
<td>9%</td>
</tr>
<tr>
<td>Transport</td>
<td>16.3</td>
<td>10%</td>
<td>9%</td>
<td>10%</td>
</tr>
<tr>
<td>Services</td>
<td>7.5</td>
<td>5%</td>
<td>7%</td>
<td>10%</td>
</tr>
<tr>
<td><strong>All sectors</strong></td>
<td><strong>164.2</strong></td>
<td><strong>100%</strong></td>
<td><strong>9%</strong></td>
<td><strong>10%</strong></td>
</tr>
</tbody>
</table>
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.
Data from reports was a valuable resource

Equipment retrofits, particularly VSDs on electric motors and improvements to process control, were the most commonly reported 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.
EEO Program evaluation

- 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

<table>
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<tr>
<th>Cumulative energy savings per year</th>
<th>Cumulative emissions reductions (unadjusted)</th>
<th>Cumulative administration costs</th>
<th>Cumulative assessment / implementation cost</th>
<th>Cumulative private sector financial savings</th>
<th>Financial return ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>(PJ)</td>
<td>26,364,000</td>
<td>18,950,000</td>
<td>914,514,376</td>
<td>3,531,614,376</td>
<td>3.67</td>
</tr>
</tbody>
</table>

Benefits and costs at the end of the first EEO Program cycle
Industrial Energy Efficiency Policy in 2018 – Success factors

- 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).