



Energy Efficiency Opportunities

SHARING LESSONS FROM ASSESSMENTS

Latest updates from participants at the 2009 EEO workshops

INTRODUCTION

Annual workshops hosted by the Energy Efficiency Opportunities (EEO) program are designed to provide companies with an update on policy and program issues. They also provide participants with an opportunity to learn from each other by sharing experiences and practical tips.

This report documents some of the most important outcomes from the workshops held in Brisbane, Sydney, Melbourne, Adelaide, and Perth in May 2009. One of the most striking aspects of these workshops has been the changing business environment within which companies are implementing the program.

- First, there has been a major change in government policy with the Australian Government proposing an emissions trading scheme, the Carbon Pollution Reduction Scheme (CPRS) to tackle climate change. This has further highlighted the benefits of energy efficiency as it will enable companies to reduce their potential liability costs.
- Second, the 'global financial crisis' (GFC) and the economic downturn have on one hand reduced access to capital for energy efficiency improvements. But on the other hand, it has refocused companies on implementing cost savings such as energy efficiency initiatives that require low or no capital. In a number of companies the importance of conducting rigorous and comprehensive assessments to identify such opportunities has increased.

Benefits of EEO in the financial crisis...

"All of the energy efficiency actions that we've taken so far have had a net financial benefit. So from our point of view the global financial crisis, in encouraging more efficient use of resources and more efficient use of energy, has worked to our advantage rather than to our disadvantage."

David McInnes, Linfox Pty Ltd

All of the workshop presentations are available on the [EEO website](#)

The next section provides an update on the EEO program and other government initiatives including the CPRS and the National Greenhouse Energy Reporting System (NGERS). This is followed by an overview of some of the main lessons from participants about leadership and engagement, data analysis, making the business case for energy efficiency, and public reporting.

More detail is provided through hyperlinks to workshop presentations and other documents on the EEO website.

POLICY UPDATE

Progress report on EEO

EEO staff reported on progress with implementation of the program, including the first aggregated data from EEO public reports. They also provided updates on specific aspects of the program, including:

- [EEO verification](#)
- [Public and government reporting](#)
- [Data analysis methods](#)
- [Energy mass balances](#)
- [Representative assessments.](#)

The program is half way through its first five year assessment cycle. An initial [analysis of the first public and government reports](#) (December 2008) has revealed that:

- 65% of energy used by EEO companies (1000 PJ) had been assessed.
- Opportunities reported as 'implemented', 'implementation commenced', or 'to be implemented' are equal to 3.4% of energy covered by the assessment or 1% of total Australian energy end use. These are saving \$434 million and 4 million tonnes of CO₂e emissions each year.
- 14% of companies will save 5-10% of their assessed energy use and 14% will save more than 10% through projects reported as 'implemented', 'commenced' or 'to be implemented'.

Many companies have identified individual projects with very significant savings. While the amount of savings depends on the how much energy is used, the basic approaches to improving energy efficiency remain similar. The largest individual reported opportunities were generally found in the resource processing, oil, gas and metals industries. Examples of large energy saving opportunities across all industries are in Table 1.

More details about the types of energy savings opportunities found in different industry sectors are contained in the [Trends from First Assessments](#) presentation given at the workshops.

Finding opportunities...

"From the initial review we actually found around 110 potential advancements and after short listing it turned out that around 18 of them had payback periods within the four year period.

The benefits of these projects were not only energy reduction but in some cases increased revenue because we had more product to sell. There were also environmental benefits including greenhouse gas reductions, improved reliability, and reduced maintenance costs."

Fiona Hancock, Santos Limited

Table 1: Opportunities generating large savings

Up to 0.1 PJ	0.1 – 0.5 PJ	More than 0.5 PJ
Behavioural changes, i.e. switching off equipment when not in use	Reconfiguring equipment or changing processes to optimise productivity and energy use	Reconfiguring plant and operations so that large back up capacity can be switched off
Installing variable speed drives on motors, pumps and fans	Using advanced software models to optimise control processes	Adapting equipment and plant heat distribution systems to enable large scale heat recovery
Reducing heat losses through insulation	Major changes to maintenance procedures or operating practices	Major equipment replacements or upgrades, such as new steam recovery systems
Improved waste heat recovery and reuse, such as flash steam recovery	Changes to loading rates or work scheduling	Improved plant maintenance & measurement systems to optimise processes
Improved process control for plant and equipment	Waste heat recovery and fuel switching	Large scale cogeneration projects
Integrate energy efficiency into equipment selection systems		

ENERGY AND GREENHOUSE POLICIES

Presentations by the Department of Resources, Energy and Tourism, and Department of Climate Change's NGRS data office highlighted important links between EEO and other energy and greenhouse gas abatement policies.

The policy challenge for the Australian Government is to reduce greenhouse gas (GHG) emissions at least economic cost, while maintaining:

- adequate, reliable and affordable energy supplies; and
- the international competitiveness of Australia's industries.

Several government programs—particularly EEO, the Renewable Energy Target (RET), the proposed CPRS and NGRS—are being implemented to help achieve this goal. The policies are complementary but have different objectives. The Department of Climate Change illustrated this conceptually in the context of the marginal abatement cost curve in Figure 1.

A marginal abatement cost curve ranks all of the known abatement opportunities according to their cost of implementation and expected reduction in GHG emissions.

A new business environment...

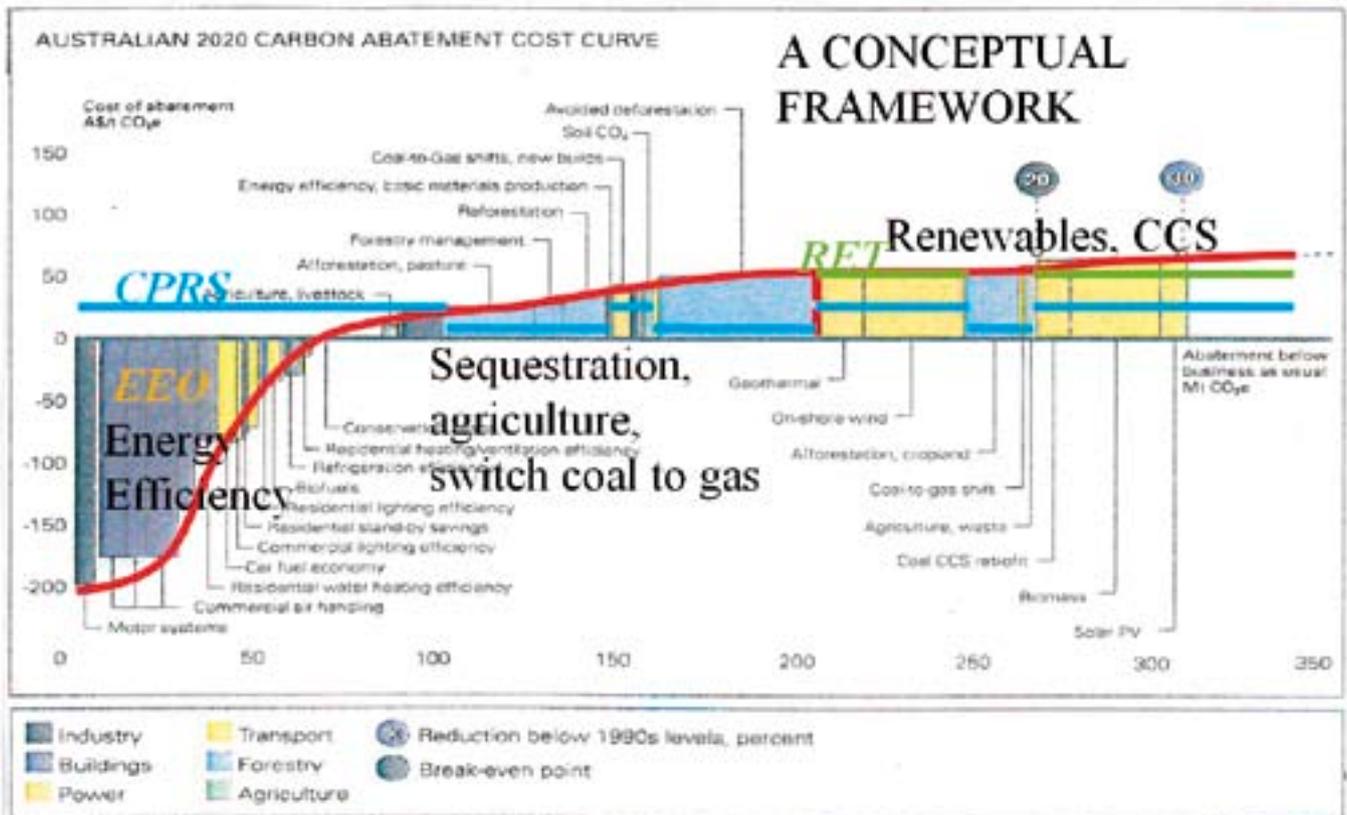
"Energy efficiency for a business like Wesfarmers, and I suspect for all businesses, is going to be just a way of doing business for the next decade or two.

It won't be enough to chase compliance; we'll have to go beyond compliance to grow the business while also making a contribution to energy efficiency and reducing greenhouse gas emissions in Australia."

Cameron Schuster, Wesfarmers Limited

- Projects that fall below the zero line generate a net cost saving. Many of these are energy efficiency opportunities. The EEO program encourages energy efficiency by overcoming barriers to implementation, such as information, organisational and cultural barriers. Reported results from first EEO assessments indicate companies saved, on aggregate, \$100 per tonne of GHG abatement.
- Projects above the line reduce GHG emissions at a financial cost. These include opportunities such as generating renewable energy, and carbon capture and storage.

Figure 1: Conceptual implementation framework using a marginal cost abatement curve approach



Note: Abatement opportunities are not additive to those of previous years.

Source: McKinsey and Company. Base scenario – assumes no nuclear power and international CDM credits.

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- The RET and CPRS will increase the cost of fossil-based energy sources relative to renewable energy. This will effectively shift the cost neutral line, making more projects cost effective to implement and increasing the savings from those already below the line.

For further details, see the presentation given by the Australian Government's Greenhouse and Energy Data Officer on [Australian Climate Change Policy](#) at the EEO workshops.

Industry response: an integrated approach

From the industry presentations it is clear that many organisations are continuing to develop an integrated approach to energy efficiency and climate change. They are implementing strategies to ensure that they comply with all relevant government programs as efficiently as possible while optimising the business benefits. Implementing the EEO Assessment Framework is helping companies to prepare for the CPRS by conducting a rigorous and comprehensive assessment that will identify least cost abatement opportunities.

Strategies being pursued by EEO companies to integrate energy efficiency and climate change responses within their businesses include:

- developing a corporate goal, such as being 'carbon neutral' by a certain date, or ambitious energy reduction targets;
- preparing a corporate strategy to provide a framework for all of the organisation's energy efficiency and GHG reduction activities;
- developing an integrated data collection and reporting system to inform energy and GHG management decisions, and meet reporting requirements for NGERs and EEO;
- developing first cut marginal abatement cost curves using EEO assessment results and identified projects;
- building a shadow carbon price into financial assessments;
- developing internal networks or best practice groups to coordinate activities and share information.

Reporting results to stakeholders

Public reports are an opportunity for organisations to inform stakeholders, such as employees, customers and investors about their environmental performance. Two workshop presentations considered EEO from the investor's perspective, noting that they are increasingly looking at the risks posed by climate change and how they can invest responsibly to mitigate these.

On the first day, workshop participants were asked about their approach to EEO reporting, including how they presented the public report to the Board. The two main challenges identified by participants were:

Workshop presentations from industry

[Gabriele Sartori, Thiess Pty Ltd](#)

[Rosemary Bissett, NAB](#)

[Michelle Woolnough, OneSteel](#)

[Daniel Cooper, Sydney Water](#)

[David McInnes, Linfox](#)

[Cameron Schuster, Wesfarmers Limited](#)

[Andreas Kammel, Toyota Australia](#)

[Victoria Nicholson, Shell Geelong Refinery](#)

[Fiona Hancock, Santos Limited](#)

[Stephen Maule, Incitec Pivot Ltd](#)

Workshop presentations from an investor perspective:

[Phil Preston, Seacliff Consulting](#)

[Andrew Barr, Australian Institute of Superannuation Trustees](#)

- the limited time available to get approval from the Board before the first deadline for public reports (31 December); and
- the EEO template for public reports, which some participants felt was not suitable for a general audience.

The advice from some of the industry speakers was to allow plenty of time for the approval process, particularly if the report had to go to a Board sub-committee first. They suggested starting the approval process as soon as possible and well before the deadline date.

There was some acknowledgement that the process of reporting to the Board has benefits. In particular, it ensures that they are aware of legislative requirements and the savings being achieved through the EEO program.

Participants also suggested using the reporting template initially to gather the necessary information, and then incorporate the content into a report in the style of their own corporate communications. This ensures companies are both meeting EEO requirements, and using their own branding to communicate the results. Some companies that have done this include the National Australia Bank and Thiess's Mining Australia Business Unit. The EEO public report was seen by many companies as an opportunity to promote the positive steps being taken by the organisation to improve energy efficiency.

Implementation of EEO: ideas from participants

Leadership, people and communication

One of the challenges workshop participants continue to face is getting key decision makers from across their businesses to support energy efficiency assessment processes. However, it is an essential part of conducting an assessment and gaining sufficient support to implement initiatives.

On the second day of the workshops, participants were asked to identify key decision makers and to develop strategies to better engage with them.

The discussion highlighted the importance of:

- understanding the interests and concerns of each stakeholder;
- identifying their experience and interest;
- developing an approach to build their support that includes clear and focused messages, as well as relevant, evidence based data and information to support their case.

Some of the different groups, and strategies to get their buy-in, are summarised in Table 2.

Further information on this topic is available in the EEO [Assessment Handbook](#). The section on developing a communications plan provides examples of different stakeholders and the key messages that may interest them (pp. 35-6).

Benefits of engaging the Board...

"The benefit [of public reports] is that it raises awareness from the Board all the way down the food-chain; it's really good that the Board recognises and focuses on it each time you do your quarterly report. They are asking me, "So, what's happening there? What kind of progress have you made?"

Gabriele Sartori, Thiess Pty Ltd

Using EEO reports as a communications tool...

"We branded our public EEO report as a NAB report, rather than using the government's template, because we believed that it would be of interest to staff, customers, investors and other stakeholders. We gave it the NAB 'look and feel' and used it to tell a story about our commitment to energy efficiency."

Rosemary Bissett, NAB

Table 2: Strategies to build support from internal stakeholders

Stakeholder group	Ideas from participants
Senior management	<p>Stress compliance, corporate reputation and cost savings, e.g. cost savings per tonne of product and reduced cost of carbon permits.</p> <p>Highlight the benefits for performance, process control and long term strategy for the business, i.e. use a business improvement rather than an environmental management approach.</p> <p>Use case studies and performance to date to convince them of the benefits.</p> <p>Use the risk management channels/systems within the business.</p> <p>Use acquisitions as an opportunity to engage and remind senior management of energy efficiency opportunities.</p> <p>Highlight the cost of energy including current prices and projected increases in energy costs.</p> <p>Identify the external stakeholders who will be affected by the program, e.g. superannuation fund investors, customers and shareholders.</p> <p>Benchmark against other companies to show management what can be done.</p> <p>Develop a corporate plan for energy and climate change and report to the Board monthly.</p> <p>Link to key business drivers and future plans.</p>

Stakeholder group	Ideas from participants
Technical/site staff	<p>Capture ideas from staff and feed back the results—this will encourage ownership.</p> <p>Develop a plan for the assessments and get sign-off from CEO and senior operational manager—people won't allocate time without a directive from above. Ensure there is a consistent corporate policy.</p> <p>Educate them about the benefits and incorporate into business/financial planning.</p> <p>Use staff training or toolbox meetings. Provide the option of an 'ideas box'.</p> <p>Appoint project champions to help drive the program—either identify people with experience or interest, or ask employees to self-nominate</p> <p>Use KPIs to drive energy efficiency. Make people accountable. Link to salary reviews.</p> <p>Ensure adequate communication about EEO from management, including goals and timeline.</p> <p>Implement opportunities with immediate cost savings to help motivate people. Trial ideas on a small scale to demonstrate success.</p> <p>Encourage competition between sites or between shifts, eg Plant 1 v Plant 2.</p> <p>Use 'playing your part to reduce GHG emissions' as the driver—some staff are more interested to contributing to a better world than increasing profits.</p> <p>Emphasise iterative improvements and the many levels of benefit.</p> <p>Help employees to relate to the issue, e.g. by issuing energy meters to staff at work, and to take home, so they can understand how much energy their appliances use.</p> <p>Use rewards and recognition to motivate staff. Provide regular positive feedback. This can be as effective as financial rewards.</p> <p>Understand personal and business drivers, e.g. compliance, financial, environmental. Provide people with the opportunity to contribute something meaningful.</p> <p>Consult staff throughout the process to engage them.</p> <p>Link to other company and site goals, objectives and policies.</p> <p>Link to operational, site and technical manager's key concerns, e.g. maintenance, OH&S, staff turnover. Energy efficiency opportunities can often identify opportunities to improve performance in other areas.</p> <p>Use peers to promote the program rather than management.</p> <p>Use symbolic projects, e.g. giving out packs with energy efficient light bulbs.</p>

Another challenge identified by participants is the need to maintain momentum once the initial assessments have been undertaken. Some of the solutions being pursued by EEO companies include:

- building EEO into existing business systems, KPIs and reward systems for staff;
- providing regular feedback to staff on outcomes, including savings in energy and GHG emissions;
- making sure that energy efficiency projects and results are regular agenda items for management meetings, with monthly reporting of KPIs;
- building EEO into site and operational plans or targets, business plans, and CAPEX plans; and
- providing training for staff to improve their knowledge and skills.

Using internal expertise...

"Our 'experts' are 3,500 staff members that spend eight hours a day doing their job and they know what is right and what is wrong. Because of the downtime that we are experiencing [at the moment] ... we have been given permission by the business to train every single employee in energy efficiency to build skills and enhance efficiencies."

Andreas Kammel, Toyota Australia

Data analysis and opportunity identification

Data analysis is a critical part of opportunity identification but it continues to be a challenge for many. Concerns that were raised at the workshops include:

- knowing how much work needs to be done to meet the program's accuracy requirements; and
- justifying the cost of sub-meters or a more detailed energy mass balance (EMB) when the potential benefits are unknown.

Companies have found particular challenges around conducting EMBs, such as understanding how much detail is required and how much it will cost if an external consultant is engaged to help.

Many companies continue to explore their approach to data collection and analysis. Even those that are more advanced have found that an iterative approach is necessary. As gaps are identified, work then needs to be done to get the data and drill down further. The benefits achieved through this process (e.g. cost savings or improvements in process control) help to justify further investment in data collection and analysis.

Several companies provided examples of how more detailed data collection, initiated in response to the EEO program, has allowed them to improve their process control. To gain the most value from the data it needs to be integrated into existing business information and reporting systems.

At the workshops, a representative from the Department delivered a presentation that described the [EEO data and analysis requirements](#).

Tom Cawley, a consultant who developed an EMB for Nystar and other companies described the benefits, challenges and practicalities of [conducting an EMB](#).

Geoff Andrews, a consultant working with the Department to develop a guide to representative assessments, described some of the situations where [conducting representative assessments](#) might be appropriate and some approaches undertaking such an assessment.

Further information on data and analysis is available in the following EEO publications:

- [EEO Assessment Handbook \(pp 43-73\)](#)
- [EEO Energy Savings Measurement Guide](#)

Knowing how much to do...

"Choosing the right data process will depend on the degree of complexity in your business. We recognised there were 700 energy flows in our business. When we went out to tender ... it was really important to see who actually understood what 700 energy flows meant."

Moira Coffey, Nyrstar

The benefits of more detailed data....

"What we've done through the EEO program is to actually collect and analyse data at far shorter timeframes. Rather than getting a monthly energy bill, or a quarterly energy bill, we are now looking at online, on-time measurement of energy ... What that allows us to do is to control our processes a lot better."

Andreas Kammel, Toyota Australia

Building in whole of business benefits...

"We have recently received the go-ahead for a tri-generation project at one of our data processing centres. It has a longer payback period than usual but we built the business case around increasing energy costs, increasing demand for energy with growth in on-line banking, and our commitment to becoming carbon neutral. This has given us an internal cost of carbon (the project will reduce the costs of purchasing carbon offsets because it will decrease our carbon footprint)."

Rosemary Bissett, NAB

Making the business case for implementation in a tough economic climate

Participants were asked how they were making business cases for energy efficiency projects, to increase the likelihood of getting the resources they needed for implementation. Many reported that the GFC has reduced the availability of capital for such projects over the past 12 months. This has made it even more important to prepare a detailed and comprehensive business case.

The following strategies were identified by participants:

- using a concise, clear format—factual and to the point;
- using statistics and external, verified data to add weight and credibility to the proposal;
- writing and acting with a sense of urgency;
- highlighting the benefits of energy efficiency in reducing business costs in a difficult economic climate;
- measuring and promoting whole-of-business benefits, e.g. production, scheduling, maintenance, corporate social responsibility, safety, risk management, interest from superannuation funds etc.;
- using case studies or scenarios to build the business case;
- getting decision makers involved early in the process to ensure their priorities are incorporated;
- using shadow pricing to include the cost of carbon;
- building in future energy price rises;
- applying for funding through the development/business improvement part of the business (rather than operations), emphasising benefits such as increased production or new markets; and
- developing a cost abatement curve.

The GFC has also prompted many organisations to develop new strategies for identifying or implementing opportunities. These include:

- using production downtime to redeploy staff to assess and implement opportunities for energy savings;
- using downtime or shutdown of plant or equipment to install a metering system or optimise the existing performance of plant or equipment;
- identifying 'quick win' opportunities;
- 'milking assets', i.e. looking for efficiency opportunities from existing assets (no capital required);
- moving ahead on low cost opportunities with paybacks of less than 12 months, e.g. fixing compressed air leaks;

A creative approach to financing...

"I think sometimes a creative approach is necessary. In our case this meant looking at other avenues for funding. We ended up getting our funding and our resources from what's basically our development area, rather than operations. The gas, the saleable product that we can save from these energy efficiency projects was worth more to the development team."

Fiona Hancock, Santos Limited

Taking advantage of the GFC...

"As with most companies, OneSteel is operating in a climate where we have very tight limitations around the amount of available capital. So over the coming financial years, we will be looking to optimise plant and equipment with little to no capital investment... We have realised quite significant benefits from our progress to date and intend to use the same methodology for other sites within the next couple of months."

Michelle Woolnough, OneSteel

- focusing on detailed evaluation or progressing the implementation of existing opportunities rather than identifying new ones; and
- looking for external funding (e.g. government grants).

Further information on preparing a business case is available in the EEO [Assessment Handbook](#) (pp. 102-3).

Energy Efficiency Opportunities



National Framework
for Energy Efficiency