



The Australian Energy Efficiency Schemes

*European workshop on experiences and policies on
energy saving obligations and white certificates,
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Presentation outline

- Australian context for EE Savings Schemes
 - *Federal Government viewpoint*
 - *State-based initiatives*
- Existing Energy Efficiency Trading Schemes
 - *NSW: Energy Saving Scheme (EES)*
 - *Victoria: Energy Efficiency Target (VEET)*
 - *South Australia: Residential Energy Efficiency Scheme (REES)*
- Key lessons from the Australian experience, and emerging issues



The Australian context

- **Productivity Commission, 2006**
 - A national energy efficiency target, based on an annual requirement to acquire a target level of energy efficiency related savings, should not be implemented.
- **Federal Govt, 2006**
 - The Government agrees that the case for a national energy efficiency target has not been made. A national energy efficiency target is not under consideration.
- **Govt. Task Group on Energy Efficiency, 2010**
 - Recommended establishing a National Energy Efficiency Savings Scheme to replace present and proposed State-based Schemes
- **However**, a number of State-based Schemes
 - Together now cover approx. 65% of Australia's population and 13.7% of final energy



Comparing Australian Schemes (1)

	NSW ESS	Victorian VEET	South Australian REES
Start	July 2009 (before part of NSW GGAS)	January 2009	January 2009
Obligated parties	mainly NSW electricity retailers	V electricity and gas retailers with more than 5,000 customers	SA electricity and gas retailers with more than 5,000 customers
Restrictions on compliance	Exclusion: Emissions intensive / trade exposed industries (ca. 20% of target)	Potential discount factor for certain project activities	35% of the reduction target to be in low income households



Comparing Australian Schemes (2)

	NSW ESS	Victorian VEET	South Australian REES
Current target	Half 2009: 287,900 MWh (2009 0.4% of liable electricity sales p.a. up to 4% in 2015-2020)	2009-2011: 2.7 Mio t CO ₂ e p.a. will increase to 5.4 Mio t CO ₂ e in 2012	2009: 155,000 tCO ₂ (3,000 audits) 2010: 235,000 (5,000) 2011: 255,000 (5,000)
Annual end use savings (TWh)	3.5 TWh from 2015		
Sectoral coverage for eligible projects	Residential, commercial and industrial	Residential and from 2012 also Small Medium Enterprises	Residential



Comparing Australian Schemes (3)

	NSW ESS	Victorian VEET	South Australian REES
Eligible Parties for savings accreditation	Accredited Certificate Providers	Accredited persons: e.g. Consumers of electricity or gas	Electricity and gas retailers can engage third parties
Trading	Allowed	Allowed	No trading but some flexibility which needs approval from Commission
Administration costs	Covered by participants accreditation fee of \$500	Covered by participants accreditation fee of \$500	



Comparing Australian Schemes (4)

	NSW ESS	Victorian VEET	South Australian REES
Penalty	After tax \$32.90 (2010) or \$24.50 MWh * 0.94 MWh/CO ₂ e (conversion factor), 50% borrowing in 1st year, 20% thereafter	2009: \$40 t CO ₂ -e plus GST	Make good base penalty \$10,000 + \$70 t CO ₂ -e + \$500 per missing audit Borrowing 10%
Certificate Size	tCO ₂ -eq. conversion factor: 1.06 kg CO ₂ -e/kWh	tCO ₂ -eq., VEEcs expire after 6 years	tCO ₂ -eq. conversion factor 2009: electricity 0.98 tCO ₂ -e/MWh and gas 0.0707 t CO ₂ -e /GJ



NSW EES: Type of Recognised Energy Savings Activities (RESAs)

- modifying end-user equipment or usage of end-user equipment (including installing additional components)
- replacing end-user equipment with other end-user equipment that consume less electricity
- installing new end-user equipment that consumes less electricity than other end-user equipment of the same type, function, output or service, or
- removing end-user equipment that results in reduced electricity consumption, where there is no negative effect on production or service levels.

... a more general approach to project types



NSW EES: Methodologies

The ESS Rule recognises three different methods for claiming the energy savings from RESAs:

- the **Project Impact Assessment Method (PIAM)** is a calculation method best suited to discrete RESAs where the overall reduction in electricity use is a small proportion of total site use.
- the **Metered Baseline Method** provides calculation methodologies for use where the RESA(s) materially reduce the electricity consumption of a whole site, or discrete part of a site, and the energy savings can be determined by reference to a site baseline. This method can be used for buildings with a National Australian Built Environment Rating System (NABERS) rating.
- the **Deemed Energy Savings Method** provides calculation methodologies for use where the RESA(s) involve installing or replacing a range of common End User Equipment types. Under these methodologies, the energy savings are deemed (i.e. the lifetime savings are created upfront).



NSW EES: Methods used

Table 6.1 2009 ESCs created by calculation method

Calculation method	2009	% of total
Project Impact Assessment Method	136,001	48.89%
Metered Baseline Method		
Baseline per unit of output	89,497	32.17%
Baseline unaffected by output	730	0.26%
Normalised baselines	0	0.00%
Normalised by NABERS scheme	4,073	1.46%
Metered Baseline Method Total	94,300	33.90%
Deemed Energy Savings Method		
Default Savings Factors	37,752	13.57%
Commercial Lighting Formula	10,123	3.64%
High Efficiency Motor Formula	0	0.00%
Power Factor Correction Energy Savings Formula	0	0.00%
Deemed Energy Savings Method Total	47,875	17.21%
Total	278,176	100.00%



NSW EES: Project types

Table 6.2 2009 ESCs created by project type

Project type	2009	% of total
End User Equipment - Commercial	61,819	22.22%
End User Equipment - Industrial	168,475	60.56%
End User Equipment - Residential	7	0.00%
Lighting (CLF) - Commercial	8,282	2.98%
Lighting (CLF) - Industrial	1,841	0.66%
Lighting (DSF) - Commercial	0	0.00%
Lighting (DSF) - Residential	0	0.00%
Refrigerator & freezer removal - Residential	0	0.00%
Showerheads - Commercial	0	0.00%
Showerheads - Residential	37,051	13.32%
Whitegoods - Residential	701	0.25%
Total	278,176	100.00%

... industrial created ESC dominate followed by commercial...

IPART: Compliance and Operation of the NSW Energy Savings Scheme during 2009



Difficulties with setting Baselines

Orica's Botany Chlorine Plant Upgrade project

- Commissiomed ChlorAlkali plants in Vic + NSW in 1998 to replace existing 1940s technology in use on site; New NSW plant completed September 2002. Metered baseline per unit of output method was chosen and got issued 12,129 t CO₂e in 2009

Hydro Aluminium Kurri Kurri Pty Ltd: Kurri Kurri Smelter Upgrade and Retrofit

- Has elected current baseline emissions + accredited intensity at 6.0 tCO₂ per tonne of primary Al. Upgrade and retrofit expected to reduce this to 2.4 tCO₂/tAl. Metered baseline per unit of output method was chosen and got issued in 2009 44,836 t CO₂e
- However, Aust. Average of 5.04 tCO₂-e/tAl in 1990 and 2.67 tCO₂-e/tAl in 2002 (Aust. Aluminium Council, Greenhouse Challenge Report, 2002)

IPART: Compliance and Operation of the NSW Energy Savings Scheme during 2009



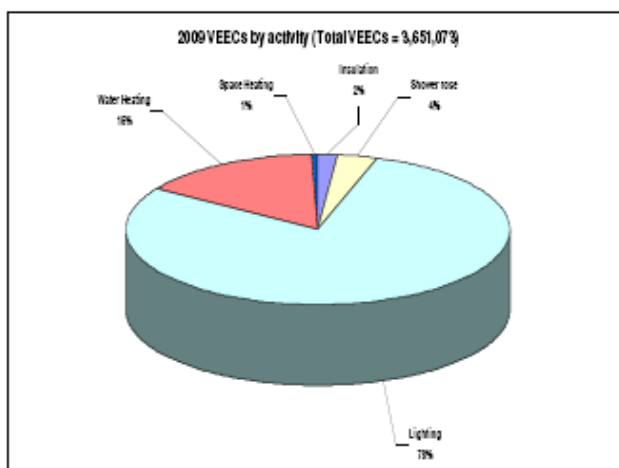
VEET: Eligible Project Activities

- Water heating - decommissioning low efficiency water heating products and installing high efficiency water heating products. This category also includes the installation of solar pre-heaters or solar retrofit kits.
- Space heating - decommissioning low efficiency ducted heating products and installing high efficiency ducted heating products; installing high efficiency ducted heating products in new homes; installing high efficiency space heating products and decommissioning refrigerative air conditioners and installing evaporative coolers.
- Space conditioning - installation insulation, thermally efficient windows and weather sealing products.
- Lighting – installing low energy lamps.
- Shower roses - decommissioning non-low flow shower roses and installing low flow shower roses.
- Refrigerators/freezers – purchasing high efficiency refrigerators or freezers (refrigerator purchase) and, destruction of pre-1996 refrigerators or freezers (refrigerator destruction)
- Televisions - purchasing high efficiency televisions.
- Clothes dryers - purchasing high efficiency electric clothes dryers and installing high efficiency gas clothes dryers.

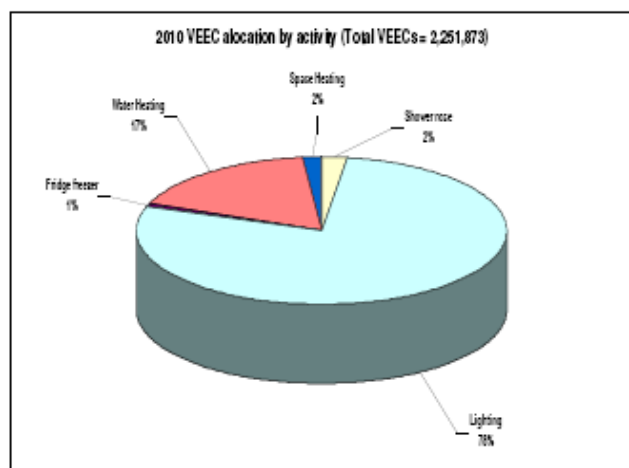


VEET: Project activities

2009



2010





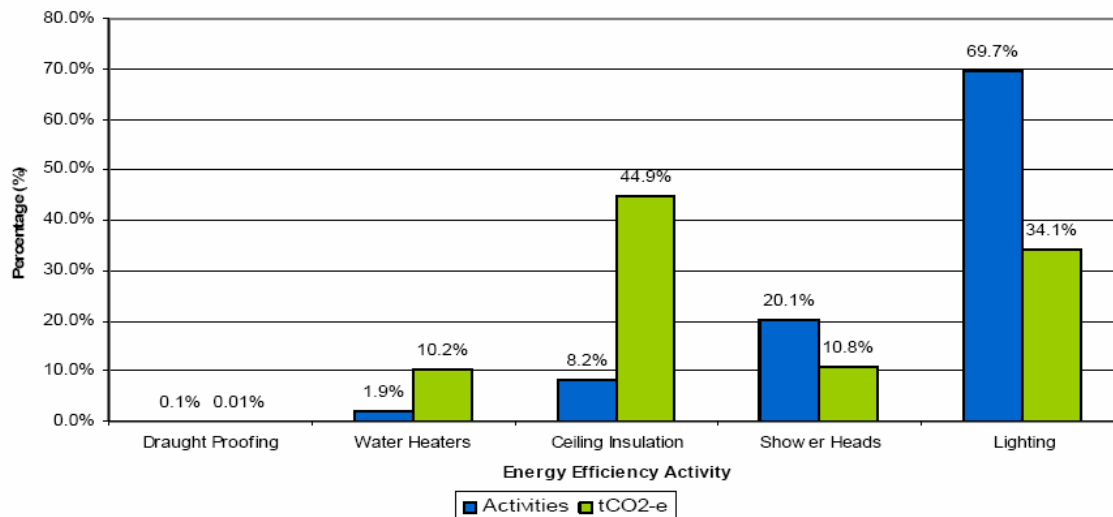
SA: List of REES activities

- 'Showerheads': replace an inefficient showerhead with an efficient showerhead;
- 'Ceiling insulation': install ceiling insulation where no insulation has previously been in place;
- 'Draught Proofing': install draught proofing products;
- 'Retiring Refrigerators and Freezers': remove and destroy a primary or secondary refrigerator or freezer;
- 'Lighting': replace an incandescent lamp with a compact fluorescent lamp;
- 'Ductwork': install insulated ductwork to a ducted reverse cycle air conditioner or gas central heater;
- 'Evaporative Air Conditioners': replace a ducted reverse cycle air conditioner with a ducted evaporative air conditioner;
- 'Heating and Cooling System – Replacement' and 'Heating and Cooling System – Install': replace an existing heating/cooling system with an efficient system; or install a small or large efficient system; and
- 'Water Heaters': install or replace a water heater with a water heater of specified type.



SA REES: Activities

Figure A - Energy Efficiency Activities in 2009
Activity and greenhouse gas emission reductions (tCO₂-e)



Lessons learnt

- Mixed success with White Certificate Systems in Australia so far
- Major challenges:
 - Setting the baseline to avoid non-additional projects
 - Inappropriate rules can create easy winners who can dominate scheme and reduce its effectiveness (eg. 'giving away CFLs' have been very significant despite considerable concerns regarding actual energy savings associated with such programs)
 - Avoiding double dipping and verification problems (e.g. with lighting projects)
 - Policy uncertainty: (e.g. VEET in 2009-2011 removed ceiling insulation activities because of Commonwealth Government's home insulation fiscal stimulus program)
 - Trust issues: e.g. poor implementation of the Commonwealth insulation program lead to bad reputation of energy efficiency measures and now requires special safety provisions for White Certificate Schemes
 - Including industry and commercial sectors seems to drive away the activities in residential area. Reasons may be lower transaction costs but higher overlap with any ETS.

Conclusions and emerging issues

- With NSW, V and SA around 65 % of Australia's population, 12.65 % of small customers and 13.7 % of final energy are already covered by a white certificate system.
- Major differences in trading rules, penalty design and coverage the latter leading to differences in project activities (NSW mainly industry sector projects only few residential and exemptions for trade exposed emissions intensive industries from CPRS legislation), but convergence over time (Victoria is adding SME)
- Many similarities between State schemes: e.g. VETT and NSW EES structure, administration fee
- White certificate systems offer great flexibility to market 'designers' and will need good governance in order to lead to efficient, effective and equitable outcomes:
 - No window dressing but effective scheme design (get baselines right!)
 - Ensure transparency and keep the design simple
- White Certificate systems have the potential to:
 - improve technology risks for emerging technologies by adding to the returns on investment
 - reduce split incentives by providing shared benefits to tenant (lower energy bill) and landlord (value of 'credit')
- Emerging issues
 - implications for vulnerable consumers of growing energy prices, and the potential role of such schemes;
 - potential integration issues with possible introduction of a national emissions trading scheme



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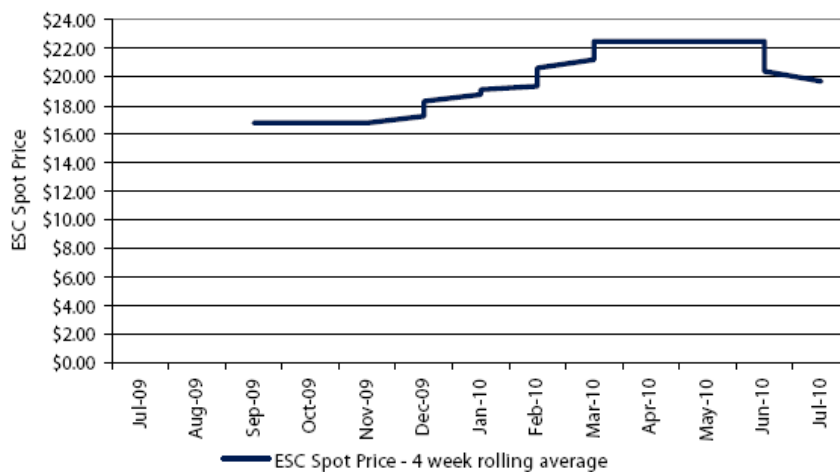


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NSW: EES price developments

Figure 7.1 Trends in the ESC spot price over 2009 and 2010



Note: This figure shows a four week rolling average of the last market spot price. This data accounts only for ESCs traded through NGES and may not reflect the price paid by NGAC buyers at the times shown. The Scheme Administrator recommends that persons seek independent advice before buying or selling ESCs, and cautions against making decisions based solely on this chart.

Data source: The Green Room, published by NGES (see www.nges.com.au)