



Trading in energy efficiency in Australia: What are the lessons learnt so far?

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Motivation

- Need to close the energy gap, which is due to various market failures and barriers for an efficient use of energy
- Several countries have used market approaches and introduced energy efficiency schemes (EES) to increase energy efficiency (e.g. France, Italy)
- Many more countries are looking to introduce such schemes e.g. Switzerland but also more EU Member States (EE Directive 2012/27/EU)
- Australia has now 4 State based energy efficiency schemes (covering approx. 65% of Australia's population and 13.7% of final energy) and the Australian government assessed the introduction of a federal scheme or harmonisation of existing schemes
- None of the schemes has been independently evaluated



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
- **Clean Energy future Plan, Energy Savings Initiative, 2011**



Comparing Australian EES Design (1)

	NSW ESS	Victorian VEET	South Australian REES
Start	July 2009 (since 2003 part of NSW GGAS)	January 2009	January 2009
Obligated Parties	NSW electricity retailers	Electricity and gas retailers with more than 5,000 customers	SA electricity and gas retailers with more than 5,000 customers
Number of Obligated parties (2012)	33 (mainly retail suppliers; some generators directly supplying customers; some market customers)	7 (4 gas & electricity; 3 electricity only).	14



Comparing EES Targets

Year	ESS		VEET/ESI		REES		
	Percentage of sales	ktCO ₂ -e	Percentage of sales	ktCO ₂ -e	Percentage of sales	ktCO ₂ -e	Audits
2009	0.4%	302	4.0%	2,700	1.7%	155	3,000
2010	1.2%	871	4.1%	2,700	2.5%	235	5,000
2011	2.0%	1,473	4.1%	2,700	3.3%	255	5,000
2012	2.8%	1,887	8.2%	5,400	3.5%	255	5,667
2013	3.6%			5,400		335	5,667
2014	4.0%			5,400		410	5,667

Source: ESS figures show the “effective target” from (IPART, 2010); REES figures from <http://www.escosa.sa.gov.au/residential-energy-efficiency-scheme-rees/rees-targets.aspx>, retrieved 07.02.12; VEET figures from (Essential Services Commission, 2011). Shaded columns are approximate calculations by the authors on the basis of aggregate demand data and carbon dioxide equivalent intensity indexes from www.aemo.co.au, retrieved 11.03.13.



Comparing Australian EES Design (2)

	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 flexibility if approved from Commission
Eligible projects	Residential, commercial and industrial	Residential and from 2012 also Small Medium Enterprises	Residential



Comparing Australian EES Design(3)

	NSW ESS	Victorian VEET	South Australian REES
Penalty	Price cap: After tax \$35.51 (it is adjusted with CPI) ca. 27 € (2012) ,50% borrowing in 1st year, 20% thereafter	Price cap: 2012: \$42.73 t CO2-e plus GST 55\$ ca. 46€ (it is adjusted with CPI), VEECs expire after 6 years	No price cap since also make good provision Base penalty \$10,000 + \$70 t CO2-e + \$500 per missing audit Borrowing 10%
Use of revenue from penalty	General budget	No information	Earmarked for energy efficiency improvements.



Comparing Australian EES Design(4)

	NSW ESS	Victorian VEET	South Australian REES
Cost recovery	Price regulated for standard contracts: Penalty price is used as basis for cost recovery (Study by Frontier economics)	Liberalised electricity market, costs to be passed through individually	Price regulated for standard contracts
Certificate Size	tCO2-eq. conversion factor: 1.06 kg CO2-e/kWh	tCO2-eq.	tCO2-eq. conversion factor 2009: electricity 0.98 tCO2-e/MWh and gas 0.0707 t CO2-e /GJ



Cost recovery

	2009-10	2010-11	2011-12	2012-13
New South Wales Energy Savings Scheme ^A	(see note B)	0.07 c/kWh (2009-10 dollars)	0.11 c/kWh (2010-11 dollars)	0.146 c/kWh (2010-11 dollars)
South Australia Residential Energy Efficiency Scheme	\$10.30 per customer ^C (Dec 2009 dollars)	\$12.55 per customer ^C (Dec 2010 dollars)	\$12.55 per customer ^C (Dec 2010 dollars)	none set

NOTES:

- A. Figures for NSW do not include energy losses, which can increase the allowances by between 5-9 per cent depending on the network in question.
- B. Regulated tariffs for the period 1 July 2007 – 30 June 2010 were determined in June 2007, before the ESS was established. Hence there are no available data on pass-through costs for this period specific to the ESS. However, the predecessor for the NSW ESS, the NSW GGAS, contributed between 0.34c/kWh and 0.36c/kWh to the 2009-10 regulated tariffs.¹
- C. A REES pass through amount of \$13.46 per average residential customer applied from 1 July 2009 to 30 June 2010. Following a review of actual REES costs incurred in 2009 and 2010, the efficient REES costs for those years were determined to be \$10.30 per customer. Between August 2010 and January 2011, the REES pass through amount declined to \$1.79 per customer, to account for the over recovery of revenue in 2009/10. The efficient REES cost in 2010/11 was determined to be \$12.55 per customer. After that there is no specific allowance set, with standing contract prices now allowed to operate within a band set by the Relative Price Movement (RPM) process.

Source: ESCOSA and IPART

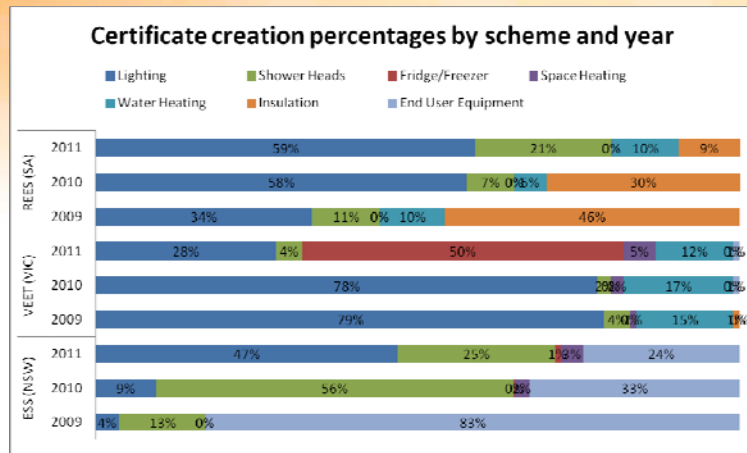


Comparing Deemed Emissions Savings

	NSW ESS	Victorian VEET	South Australian REES
Formula	Default Savings Factor (0.45 MWh) x Installation Discount Factor (e.g. 1) x Certificate Conversion Factor (1.06) 2 other methods	Product abatement factor (0.41) x Regional abatement factor (0.98 metropolitan or 1.04 regional)	none
Savings	0.477 tCO ₂ -e	0.4019 tCO ₂ -e (metropolitan) 0.4264 tCO ₂ -e (regional)	0.43 tCO ₂ -e (directional lamp) 0.18 tCO ₂ -e (non-directional)



Evaluation: Energy Efficiency Activities (Proportional) by Scheme and Year



Evaluation: Compliance

	ESS ESCs			VEET VEECs			REES Activities			REES Audits		
	2009	2010	2011	2009	2010	2011	2009	2010	2011	2009	2010	2011
Surplus (shortfall) from previous year	0	(139,843)	(29,012)	0	(148,491)	92,361	0	54,989.6	61,308	0	675	2,201
Created /carried out	276,942	764,385	1,086,120	3,724,493	2,365,036	1,914,202	208,335	248,083	200,594	3,674.50	6,527	3,326
Target for t	289,118	858,004	1,414,315	2,700,000	2,700,000	2,700,000	155,000	235,000	255,000	3,000	5,000	5,000
Surrendered /submitted	148,928	651,655	1,063,564	2,547,700 + 3,809	2,940,862	2,570,229	same as creation			same as creation		
Surplus (shortfall) carried forward	(139,843)	(29,012)	(152,300)	(148,491)	92,361	(37,410)	53,335*	68,072.6*	6,902*	674.5*	2,206*	527*
Penalties, units	1,997	317,180	251,361	952	0	0	0	0	2,875	0	0	25
Penalties, AU\$	\$45,989	\$7,304,675	\$6,029,848	\$38,080	0	0	0	0	\$221,250	0	0	\$22,500

Source: Authors, from (ESC Victoria, 2010, 2011, 2012a; ESCOSA, 2012a; IPART, 2010b, 2011a, 2012b), VEET Register of Energy Efficiency Certificates (<https://www.veet.vic.gov.au/Public/PublicRegister/Search.aspx>, retrieved on 14/11/2012) and own calculations (noted with *).



Scheme Participant Energy savings shortfall in NSW by EES

	2010		2011	
	Certificates	Penalty (\$)	Certificates	Penalty (\$)
AGL Sales Pty Ltd	37,225	\$857,291.00		
Country Energy*	76,918	\$1,771,421.54		
Infigen Energy Markets Pty Ltd	2,794	\$64,345.82	7,410	\$177,757
Integral Energy*	141,010	\$3,247,460.00		
Lumo Energy (NSW) Pty Ltd	242	\$5,573.26		
Momentum Energy Pty Ltd	7,859	\$181,015.00	9,525	\$228,493
TRUenergy Pty Ltd	39,135	\$901,278.00	196,752	\$4,719,844
TRUenergy Yallourn Pty Ltd	11,769	\$271,040.00	37,103	\$890,056
Total	316,952	7,299,424.62	250,790	\$6,016,150

* NSW government owned in 2010



Price Development in NSW

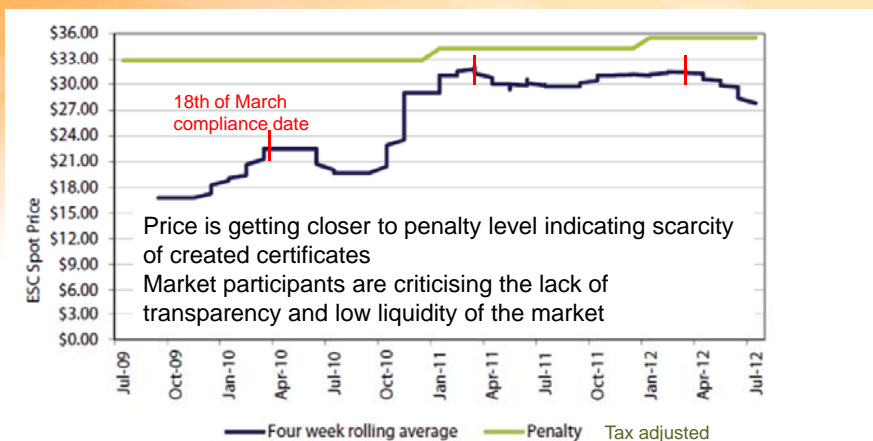


Figure 3. Trends in the NSW EES ESC spot price over the period July 2009 to July 2012. Source: (IPART, 2012, p. 52).

Price development in Victoria



Figure 4. Historic Spot Price vs. Cumulative VEEC Registration 2009–January 2012. Source: (RAP, 2012, p. 26).

Lessons learnt

- Mixed success with White Certificate Systems in Australia so far
- Many variations of designs possible, depending on other circumstances (e.g. electricity market)
- Major challenges:
 - Setting the reference case to avoid non-additional projects
 - Inappropriate rules (eligibility lists and deemed savings) 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)
 - Penalty design and revenue usage may have impact on behaviour
 - 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



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