

White Certificates in Australia

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Presentation Topics

- Overview of white certificates in Australia
- Greenhouse Gas Reduction Scheme (GGAS)
- Victorian Energy Efficiency Trading scheme (VEET)
- Residential Energy Efficiency Scheme (REES)
- Conclusion
- Information Resources

Overview of White Certificates in Australia

Introduction

- In Australia, there are currently two white certificate schemes in operation or planned:
 - ▶ the Greenhouse Gas Reduction Scheme (GGAS) in operation in the State of New South Wales (NSW) and the Australian Capital Territory (ACT)
 - ▶ the Victorian Energy Efficiency Target scheme (VEET) being planned in the State of Victoria
- In the State of South Australia, an energy efficiency target scheme without certificates, the Residential Energy Efficiency Scheme (REES), is being planned
- In addition, the Commonwealth (federal) government is planning to introduce a national emissions trading scheme (ETS) in 2010

Australian States



Energy Efficiency vs Emissions Trading

- In Australia there has been a continuing, if not always rational, debate about energy efficiency schemes vs the forthcoming national emissions trading scheme (ETS)
- Classical economists maintain that the ETS is all that's required and that implementing energy efficiency schemes as well will distort the emissions trading market
- Advocates of energy efficiency schemes maintain that the ETS will not address barriers preventing the uptake of cost-effective energy efficiency measures and that energy efficiency schemes are required to achieve this
- At present, three State Governments are proceeding with energy efficiency schemes but the debate may not be over yet

Double Counting (1)

- Another argument has been about whether energy efficiency schemes will be ‘double counting’ emissions when the ETS is introduced
- The energy efficiency schemes in Australia are based on different variations of **baseline-and-credit** designs in which each obligated party is assigned a baseline of allowable emissions or a target to be achieved
- Tradeable certificates are created from emissions abatement or reductions in energy consumption and obligated parties surrender these certificates for any emissions in excess of their baselines or to achieve their targets

Double Counting (2)

- In contrast, the Australian national ETS will be a **cap-and-trade** scheme, similar to the EU scheme, which sets an absolute limit on emissions, allocates permits to emit and allows trading of permits between the obligated parties
- Obligated parties will surrender permits for all their emissions and emissions abatement will reduce the number of permits they have to surrender
- As a consequence of the cap-and-trade design, providing offsets for energy efficiency undertaken in the same sector as the obligated parties involves double counting of abatement

Double Counting (3)

- For example, in a cap-and-trade scheme where direct emissions from the electricity sector are capped, any emissions reductions from energy efficiency projects that reduce electricity consumption are automatically included in the measurements of the actual emissions attributed to obligated parties
- Consequently, calculations of the number of permits required to be surrendered by obligated parties already take account of the emissions reductions from energy efficiency projects
- Therefore, providing offset credits for these emissions reductions and allowing the credits to be surrendered in lieu of permits would actually count the emissions reductions twice

Double Counting (4)

- In the Australian national ETS, because of the double counting issue, no mechanism is being planned to enable trading of emissions reductions from energy efficiency projects
- This has strengthened the resolve of advocates of energy efficiency schemes to ensure that such schemes continue to be implemented at the State level in Australia

Greenhouse Gas Reduction Scheme (GGAS)

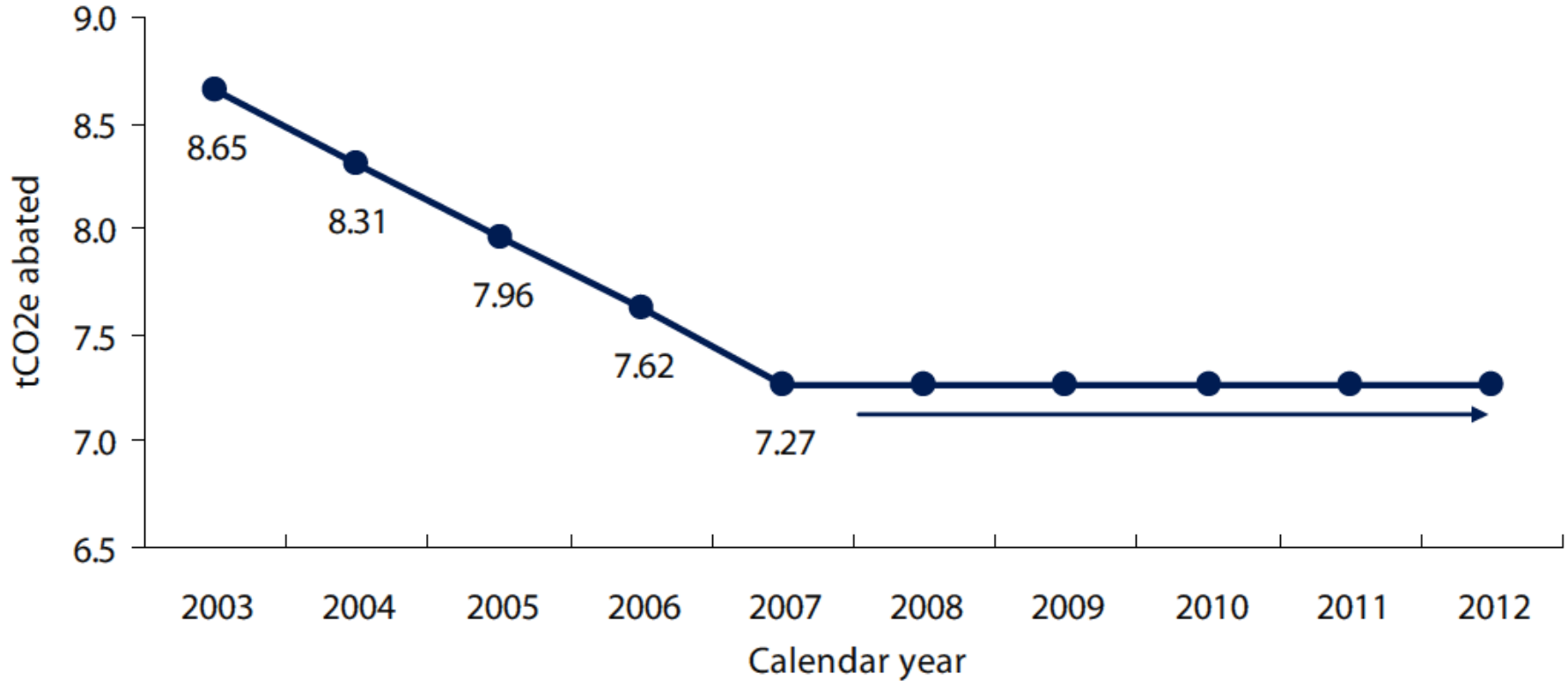
White Certificates in NSW and the ACT

- White certificates in New South Wales and the Australian Capital Territory are part of a larger scheme, the Greenhouse Gas Reduction Scheme (GGAS)
- Obligations to reduce GHG emissions under GGAS were imposed from 1 January 2003 and the Scheme started operating in mid-2003 in NSW and two years later in the ACT
- This makes the NSW Scheme the first operational white certificates scheme in the world

GGAS Benchmark Target (1)

- GGAS aims to reduce GHG emissions associated with the generation and use of electricity through project-based activities to offset the production of emissions
- The GGAS legislation imposes a benchmark target for GHG emissions on the electricity sector as a whole in NSW and the ACT
- The benchmark target was set at **7.27 tCO₂-e** of greenhouse gas emissions per capita in NSW by 2007
- The benchmark has progressively dropped to this per capita level since GGAS commenced in 2003 and will remain at that level until 2021 or until GGAS terminates

GGAS Benchmark Target (2)



NSW Benchmark Targets, 2003 to 2021

GGAS Benchmark Target (3)

- The overall benchmark target is implemented by setting individual benchmark emissions levels for certain obligated parties, principally electricity retailers
- Obligated parties are known as 'benchmark participants'
- Each year, the Scheme Administrator sets individual benchmark reductions of greenhouse gas emissions for each benchmark participant based on their contribution to the supply of electricity in NSW
- Each benchmark participant then has to reduce the average GHG emissions from the electricity they supply or consume to the pre-set individual benchmark level

GGAS Certificates

- When the emissions attributed to a benchmark participant exceed its pre-set benchmark level, the participant has to reduce its average GHG emissions
- Alternatively, the benchmark participant may purchase certificates, called New South Wales Greenhouse Abatement Certificates (NGACs), to offset its excess emissions and surrender these certificates
- NGACs are transferable and may be freely traded between any parties

1 NGAC = 1 tCO₂-e

GGAS Penalty

- A penalty is payable when a benchmark participant does not reduce their attributed GHG emissions to their pre-set individual benchmark level or purchase sufficient NGACs to make up the shortfall
- Benchmark participants are allowed to carry forward a shortfall of up to 10% of their greenhouse benchmark from one year to the next
- For the 2007 compliance year, the penalty is **AUD12.00 (EUR6.20) per tonne** of CO₂-e above the participant's benchmark; the penalty is increased in line with inflation
- The penalty is not tax-deductible; therefore at the Australian company marginal tax rate of 30%, the financial impact of the penalty is about **AUD15.60 (EUR8.10) per tonne** of CO₂-e
- This figure sets an upper limit for the price of NGACs

NGAC Creation

- To create NGACs, parties must be accredited by the Scheme Administrator; they are then called 'Accredited Abatement Certificate Providers'
- NGACs can be created in four ways:
 - ▶ through low-emission generation of electricity;
 - ▶ through activities that result in reduced consumption of electricity ('demand side abatement');
 - ▶ through the capture of carbon from the atmosphere in forests ('carbon sequestration');
 - ▶ through industrial activities that reduce on-site GHG emissions not directly related to electricity consumption

NGACs - Supply and Demand

Supply

Accredited Abatement Certificate Providers

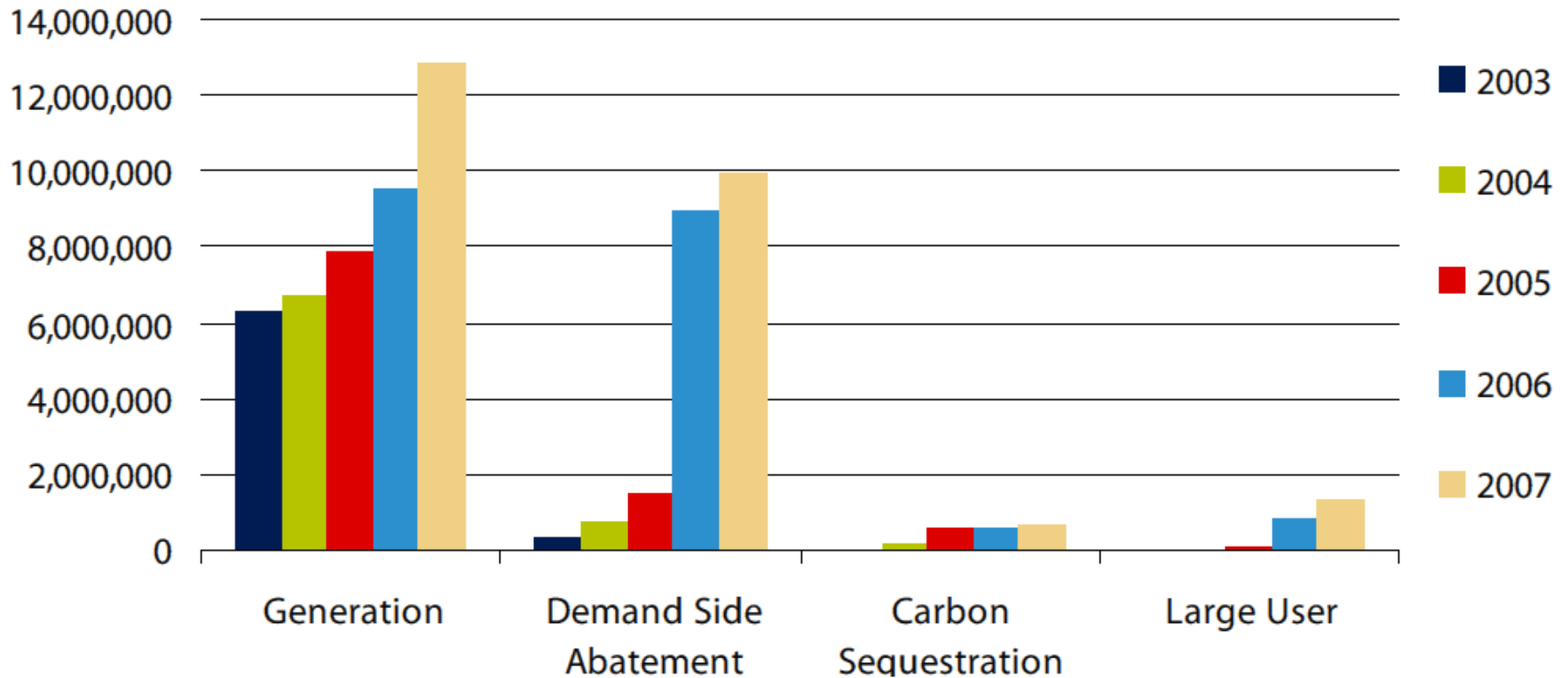
- ▶ Low emission electricity generation
- ▶ Demand side abatement
- ▶ Forest-based carbon sequestration
- ▶ Industrial processes

Demand

Benchmark Participants

- ▶ Electricity retailers
- ▶ Market customers
- ▶ Generators who supply electricity directly
- ▶ Large electricity users (elected in)

NGACs Created by Type of Abatement



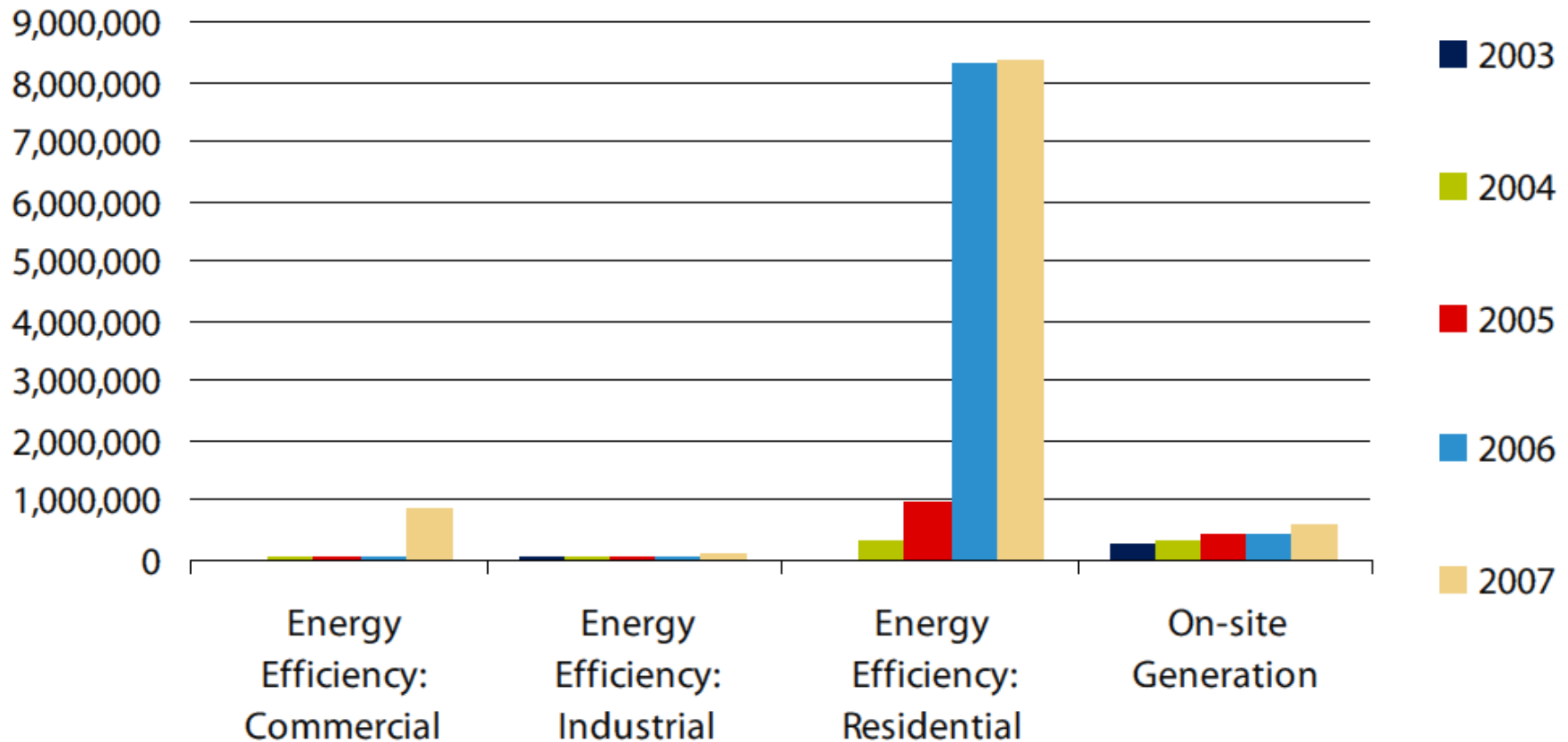
Total 43.3 million Total 21.5 million Total 2.0 million Total 2.2 million

NGACs Created to End 2007 by Type of Abatement

Demand Side Abatement

- Demand side abatement comprises five types of activities:
 - ▶ **Energy efficiency:** modifying existing installations
 - ▶ **Energy efficiency:** replacing existing installations
 - ▶ **Energy efficiency:** implementing a new installation that uses less electricity than an installation of the same type
 - ▶ **Fuel switching:** substituting one source of energy for another
 - ▶ **On-site electricity generation:** replacing supply from the National Electricity Market
- NGACs created through energy efficiency projects are **white certificates**

DSA NGACs Created by Type of Project



Total 1.1 million Total 0.3 million Total 18.0 million Total 2.1 million

DSA NGACs Created to End 2007 by Type of Project

Residential Energy Efficiency Projects

- From 2004 onwards, an increasing proportion of energy efficiency NGACs were created from projects in the residential sector
- In 2006, there was an eightfold increase in the number of energy efficiency certificates created, up from 1.04 million in 2005 to 8.46 million in 2006
- This high level of creation of energy efficiency NGACs was maintained in 2007
- Most of these certificates were created using the default emissions abatement factors method in which installations of specified appliances were deemed to create a set number of NGACs

GGAS Default Emission Abatement Factors

Gas hot water system replacing an electric one	20
Compact fluorescent lamp rated at 8000+ hours	0.5
Compact fluorescent lamp rated at 5000+ hours	0.3
AAA showerhead connected to an electric hot water system	4.0
AAA showerhead connected to a hot water system with an unknown energy source	3.1
Refrigerator 3.5 to 6 star rating	0.1 to 2.5
Clothes washer 2.5 to 6 star rating	1.3 to 3.5
Clothes dryer 3 to 6 star rating	0.3 to 1.2
Dishwasher 4 to 6 star rating	0.1 to 0.5

Discount and Giveaway Programs (1)

- Most energy efficiency NGACs were created by projects in which CFLs and water-efficient showerheads were sold at a discount or given away free of charge to households
- Firms purchased CFLs and showerheads in bulk and generated a profit by selling the resulting NGACs that were assigned to them by the householders
- In 2006, four firms each created more than one million NGACs from residential energy efficiency, including one firm that created more than three million NGACs

Discount and Giveaway Programs (2)

- In early 2006, the GGAS Scheme Administrator became concerned that the CFLs and showerheads obtained by households through giveaway schemes may not actually be installed
- An independent market survey showed that more than half of CFLs and showerheads given away had not been installed
- Estimates made by the Scheme Administrator showed that, by December 2006, almost as many showerheads would have been distributed as there are eligible showers in NSW, and about two-thirds of the CFL market would have been exhausted

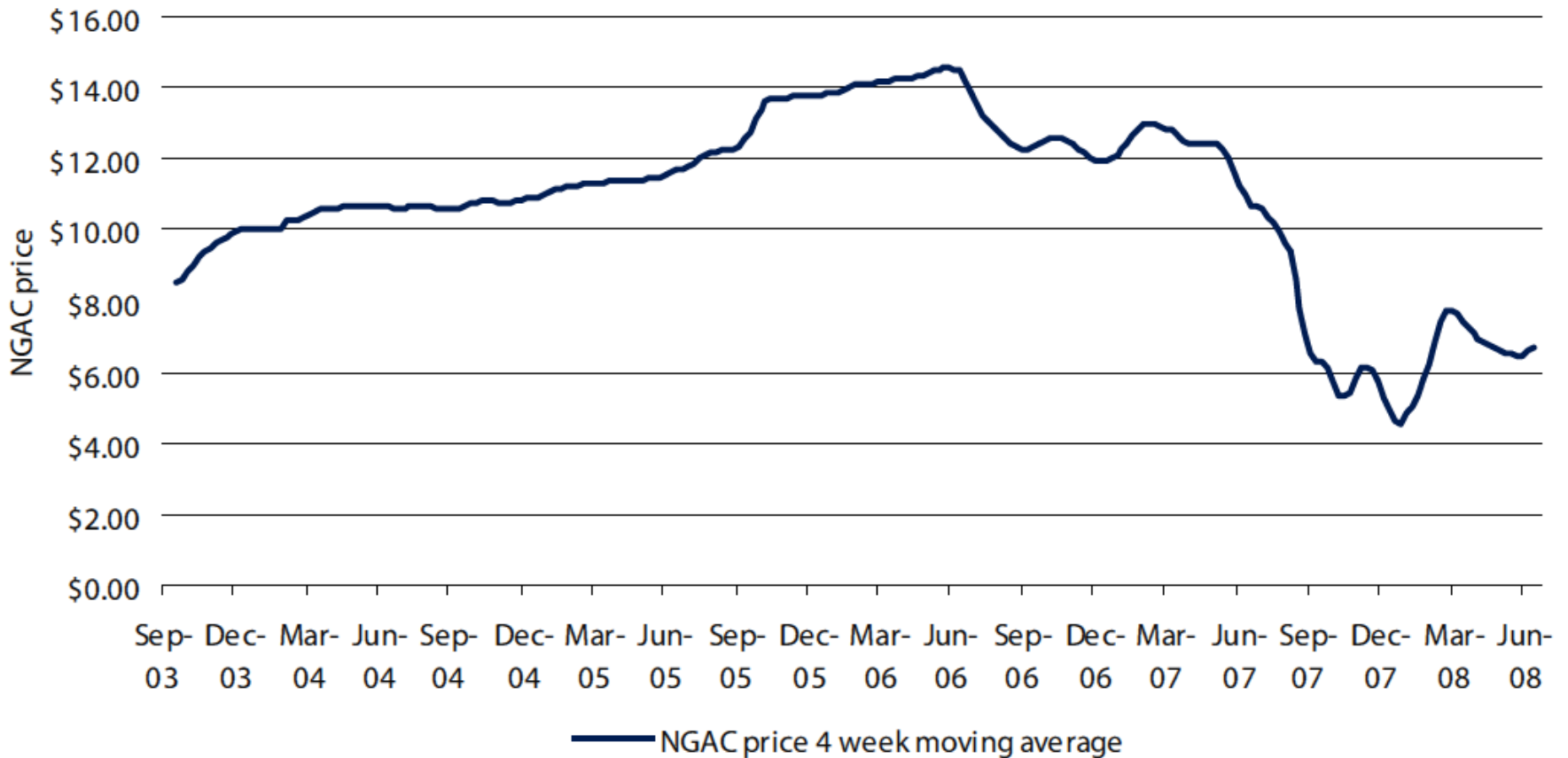
Discount and Giveaway Programs (3)

- The Scheme Administrator responded by changing the value of the discount factor applied to giveaway schemes; a CFL was then worth **0.2 tCO₂-e** rather than **0.5 tCO₂-e**
- Most of the firms involved changed their business model from giveaways to direct installation, in which they employed installers to directly install CFLs and showerheads in residential and small commercial premises

Impact of Spot Price Fall

- Residential energy efficiency projects were also strongly affected in mid-2007 when the spot price for NGACs fell sharply from about **AUD12 (EUR6.20)** to **AUD6 (EUR3.10)**
- The spot price collapse was caused by uncertainty about the future of GGAS when the national ETS was implemented, plus an oversupply of NGACs in the market
- This significantly reduced the commercial viability of mass distributions of CFLs and showerheads
- One firm closed but other firms are continuing, with further modifications to their business models

NGAC Spot Price

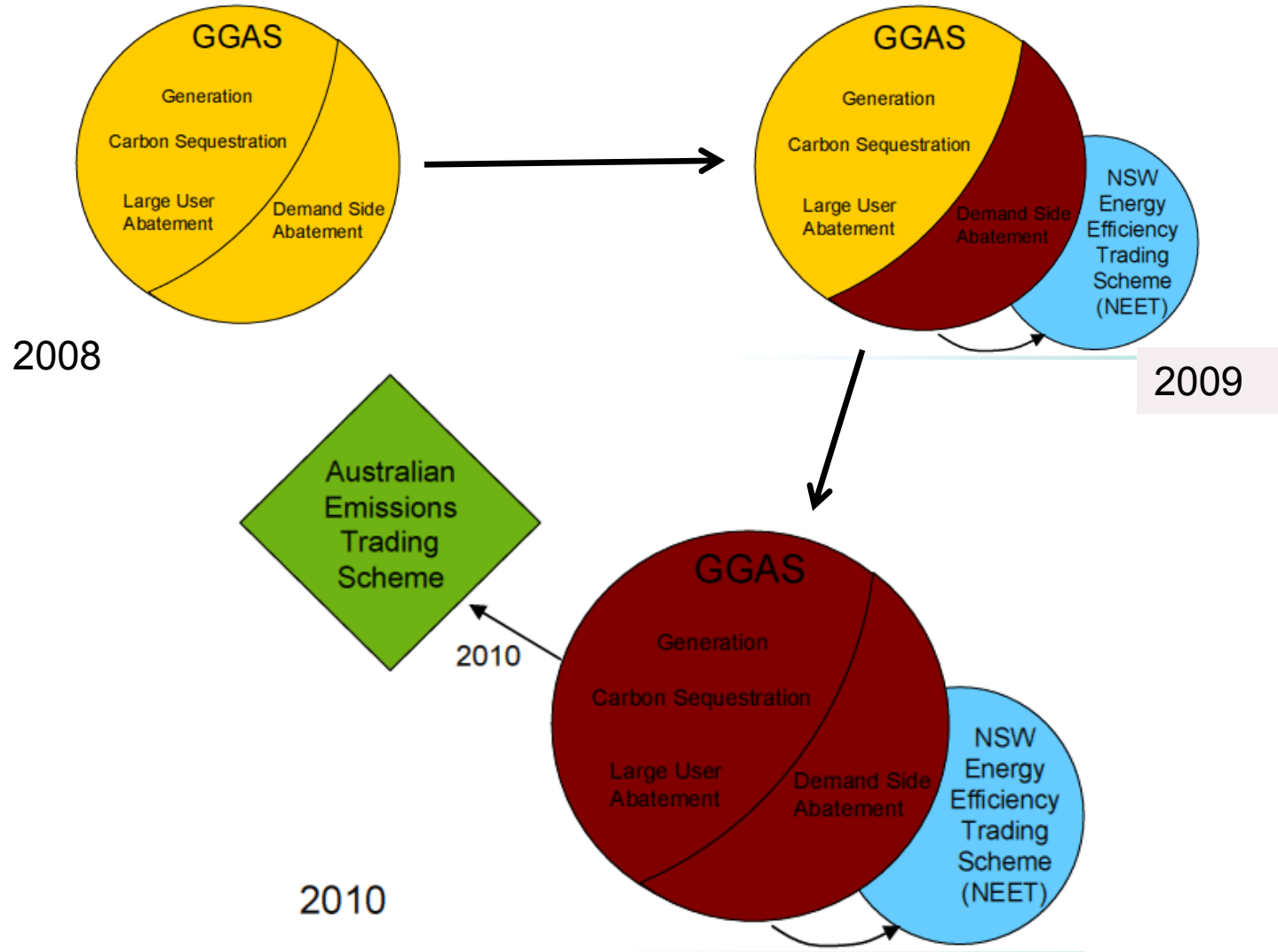


Trends in the NGAC Spot Price

Future of White Certificates in NSW (1)

- GGAS will terminate when the national ETS is implemented in 2010
- However, the NSW Government has decided to continue the energy efficient component of GGAS as a 'pure' white certificate scheme called the NSW Energy Efficiency Target (NEET), to commence on 1 January 2009
- A new target will be set to increase energy efficiency activity under the NEET scheme
- The total energy savings requirement each year will be set as a given percentage of the liable electricity sales for that year; the percentage will be fixed for each year but need not be the same in all years

Future of White Certificates in NSW (2)



Victorian Energy Target Scheme (VEET)

VEET Overview

- The Victorian Energy Target scheme is currently being designed
- The scheme will commence on 1 January 2009 and is scheduled to end on 31 December 2029
- During this period, VEET will operate in three-year phases
- Obligated parties will be major energy retail businesses in Victoria, including both electricity and gas retailers
- While VEET is a 'pure' white certificates scheme, the unit of measurement is emissions abatement (tCO₂-e) rather than reduction in energy use (MWh)

VEET Objectives

- The VEET scheme has three objectives:
 - ▶ to reduce greenhouse gas emissions
 - ▶ to encourage more efficient use of electricity and gas; and
 - ▶ to encourage the development of an industry specialising in improving household energy efficiency

VEET Target

- The VEET legislation establishes an annual target of avoided GHG emissions to be achieved by major energy retail businesses in Victoria, through improvements to household energy efficiency
- The target for Phase 1 of VEET has been set through regulations as **2.7 megatonnes of GHG avoided** in each of the first three years of operation of the scheme (a total of 8.1 megatonnes over three years)
- Energy and gas retailers will be allocated individual annual targets based on their share of the combined electricity and gas market in Victoria in the previous year

VEET Certificates

- The VEET scheme is based on the creation of tradeable certificates known as Victorian Energy Efficiency Certificates (VEECs)

1 VEEC = 1 tCO₂-e of lifetime abatement

- VEECs may be created by implementing any of a list of eligible energy efficiency activities prescribed by regulations; the regulations also deem the number of VEECs that can be created for each activity
- Eligible activities are prescribed on the basis that they are most likely to generate maximum GHG abatement at least cost in the VEET scheme

VEET Eligible Activities

- An initial list of about 25 eligible activities has been prescribed in draft regulations for Phase 1 of VEET
- These activities are all in the household sector, though the scope may be extended to the small business and commercial sectors in later phases of VEET
- The list of eligible activities will be reviewed every six months and this will provide an opportunity to add measures to the list, such as products for which there is currently no accepted energy performance test or standard

Proposed Eligible Activities

Gas/LPG storage water heater replaces an electric resistance water heater	Installation of gas/LPG space heater
Gas/LPG instantaneous water heater replaces an electric resistance water heater	Install high efficiency space air-to-air heat pump (non gas reticulated areas only)
Electric boosted solar or heat pump hot water heater replaces an electric resistance water heater	Installation of ceiling insulation in existing home with uninsulated ceilings
Solar retrofit kit fitted to an existing electric resistance water heater	Installation of under floor insulation in existing home with uninsulated floors
Gas/LPG boosted solar hot water heater replaces electric resistance water heater	Installation of a thermally efficient window
Gas/LPG boosted solar hot water replaces gas/LPG water heater	Retrofit of existing single glazed window with a fixed attachment which raises thermal efficiency of existing window
Solar pre-heater for an existing gas/LPG water heater	Air sealing
Installation of high efficiency ducted gas heater to replace existing gas ducted heater	Installation of low energy GLS lamp
Installation of high efficiency ducted gas heater to replace existing central electric resistance heater	Installation of low energy small decorative lamp
Installation of ducted air-to-air heat pump to replace existing ducted air-to-air heat pump (non gas reticulated areas only)	Installation of low energy reflector lamp
Installation of ducted air-to-air heat pump to replace existing central electric resistance heater	Installation of low energy downlight
	Installation of low flow shower rose replacing conventional shower rose
	Destruction of refrigerator purchased before 1996
	Purchase of high efficiency refrigerator
	Purchase of high efficiency freezer

Operation of VEET

- Certificate creators will offer householders energy efficiency products selected from the list of eligible activities
- If they choose to accept the offer, householders will sign a form assigning to the certificate creator the right to create VEECs based on an eligible activity having taken place in the householders' premises
- Once the VEECs have been created and registered, the creator will be free to sell them to the obligated parties (energy retailers)

VEET Penalty

- The VEET scheme will have a higher penalty than GGAS, proposed as **AUD40 (EUR20.70)** per tCO₂-e
- Initial modelling suggests that the certificate prices to achieve the target will also be higher than GGAS, eg around **AUD25 (EUR12.90)** per tCO₂-e
- This higher certificate price should help the market develop beyond just CFLs and water-efficient showerheads

Residential Energy Efficiency Scheme (REES)

REES Overview

- The South Australian Residential Energy Efficiency Scheme (REES) is currently being designed
- The REES will commence on 1 January 2009 and while it is intended to be ongoing, it will initially apply until 31 December 2014
- The scheme will operate in three-year phases
- Obligated parties will be all licensed retailers of electricity and gas in South Australia who supply more than 5,000 residential customers
- While the REES is an energy efficiency target scheme, the unit of measurement is emissions abatement (tCO₂-e) rather than reduction in energy use (MWh)

REES Objectives

- The primary objectives of the REES are:
 - ▶ to improve energy efficiency and reduce greenhouse gas emissions within the residential sector
 - ▶ to assist households prepare for likely energy price increases from emissions trading
 - ▶ to reduce total energy costs for households, particularly low income households

REES Targets (1)

- For each year of the REES, obliged retailers will be required to achieve three targets:
 - ▶ **Greenhouse Gas Reduction Target (GGRT)** – to achieve a set amount of greenhouse gas savings (tCO₂-e) by implementing approved energy efficiency activities in households
 - ▶ **Priority Group Greenhouse Gas Reduction Target (PGGGRT)** – to achieve a set proportion of the GGRT in priority group households; and
 - ▶ **Energy Audit Target** – to undertake a set number of energy audits in priority group households

REES Targets (2)

For each obliged licence

Greenhouse Gas Reduction (GGRT)

tCO₂-e

Residential premises

Priority Group Greenhouse Gas Reduction (PGGGRT)

%

Priority Group households

Sub

Energy Audits (EAT)

Number hhlds

Priority Group households

Incentives offered to any SA household to implement EE activities. Owner -v- occupant.

How meet?

Delivery of energy audits. Occupant.

Approved EE Activities

Audits meeting min spec

REES Targets (3)

- The Minister for Energy will set the total targets to be achieved by the REES each year
- The Scheme Administrator will then allocate individual targets to obliged retailers based on formulae established in regulations
- The formulae will take into account greenhouse gas emissions associated with residential energy sales, accredited GreenPower sales to residential customers, and residential customer numbers
- To meet targets for priority group households, retailers must be able to substantiate that householders hold one or more specified benefit cards or are recognised to be in hardship on criteria to be determined by the Scheme Administrator

REES Credits (1)

- The REES is **not** based on tradeable energy efficiency certificates ('white certificates'); instead retailers will accumulate **credits** towards their three targets
- The scheme permits unlimited 'banking' of credits by retailers; where retailers undertake energy audits or achieve greenhouse gas savings in excess of their targets in any one year, they may choose to carry those credits over to help meet targets in subsequent years
- Retailers may also choose to transfer any excess credits to another obliged retailer, this will enable a limited amount of 'trading'

REES Credits (2)

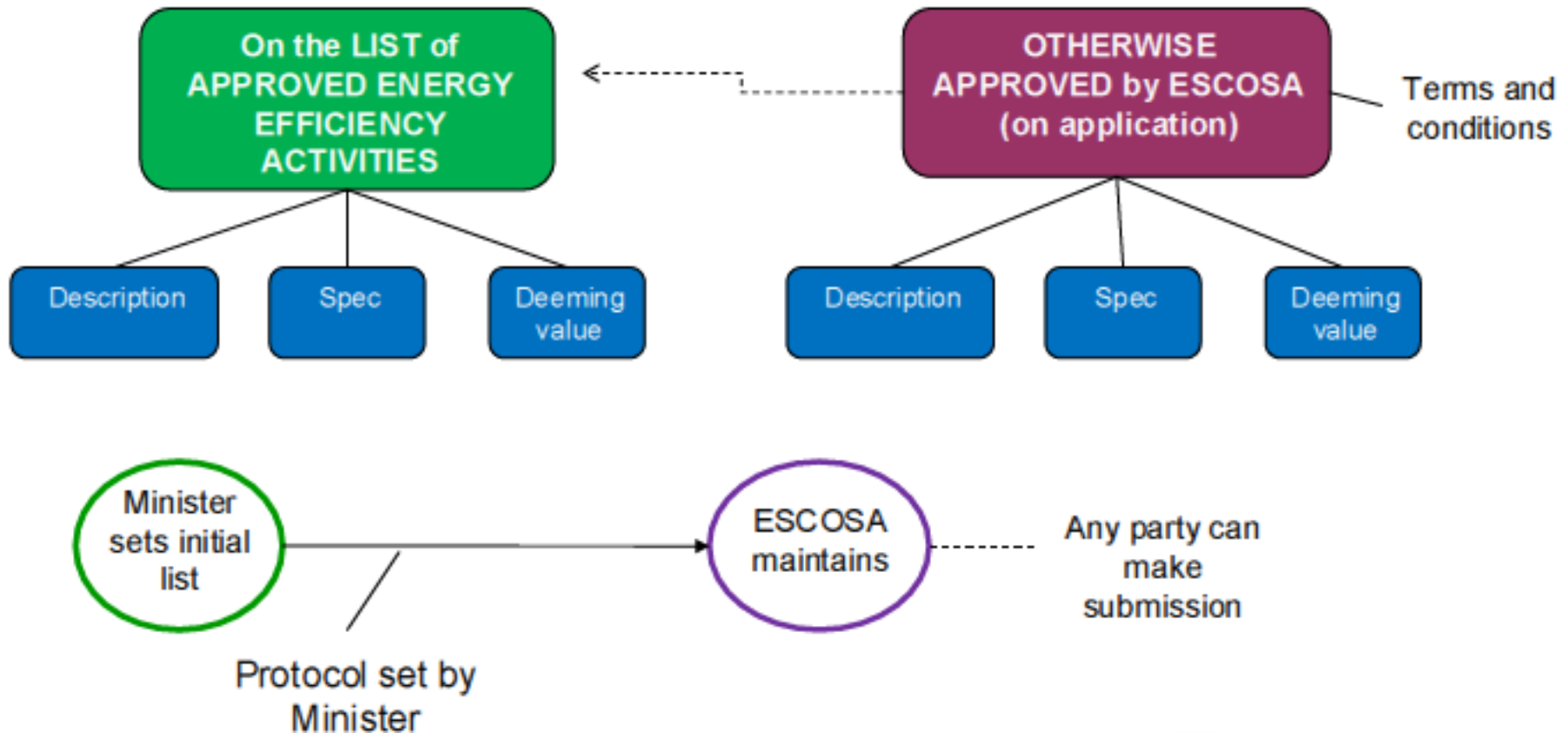
- The scheme does not permit retailers to ‘borrow’ credits from future years to meet targets; if they do not meet their target in any given year, they will be liable for a shortfall penalty
- A shortfall penalty will not be imposed if the retailer has achieved 90% or more of its target; however, any such shortfall must be carried over to the subsequent year

REES Approved Activities (1)

- To claim credits towards their greenhouse gas reduction targets, retailers must implement ‘approved energy efficiency activities’
- A list of approved activities and their deemed credit values will initially be set by the Minister for Energy
- Retailers may apply to the Scheme Administrator to implement an energy efficiency activity that is not currently on the approved list
- The Scheme Administrator will assess the application, and if approved, establish the description, specification and deemed credit value for that activity

REES Approved Activities (2)

Two types

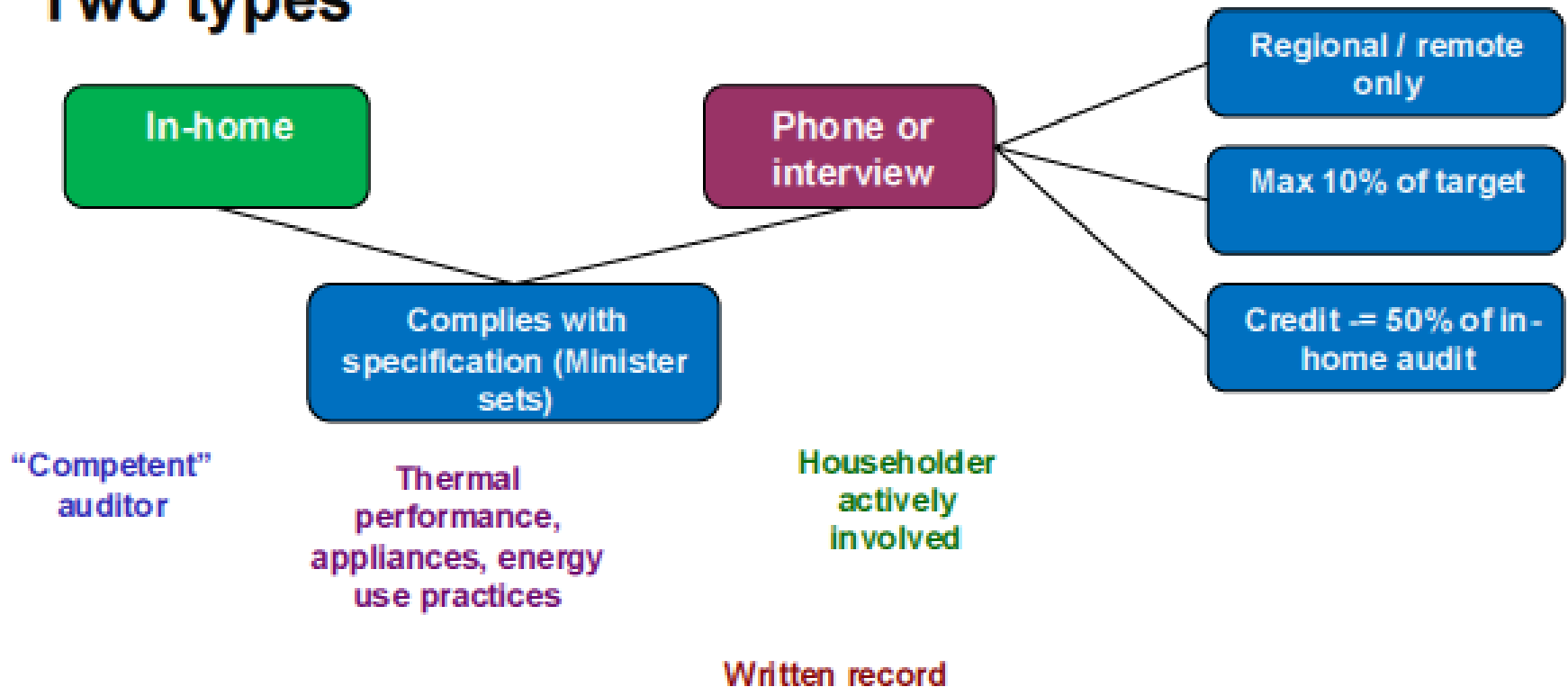


REES Energy Audits (1)

- To claim credits for energy audits, retailers must ensure that any audits undertaken comply with the minimum specification, as set by the Minister for Energy
- Energy audits must usually be undertaken in the home but the REES also provides flexibility to conduct the audit by phone or office-based interview where:
 - ▶ the interview is conducted in accordance with the minimum specification; and
 - ▶ the priority group household resides in a regional or remote area of South Australia
- A retailer may not meet more than 10% of its energy audit target with interviews conducted by phone or interview
- A phone/interview audit will be valued at 50% of one credit towards the retailer's energy audit target

REES Energy Audits (2)

Two types



Conclusion

Conclusion

- At present, it seems as though some state-based energy efficiency schemes in Australia will co-exist alongside the national emissions trading scheme
- (This also applies to some state-based renewable energy schemes)
- The rationale for this co-existence is that:
 - ▶ the national ETS will not ensure that all (or even some) cost-effective energy efficiency measures are actually implemented; and
 - ▶ the energy efficiency schemes are intended to achieve other objectives in addition to reducing GHG emissions

Information Resources

Information Resources

- David Crossley: crossley@efa.com.au
- Energy Futures Australia, my company's website: www.efa.com.au
- My paper on GGAS in the international journal *Energy Efficiency*: <http://www.springerlink.com/content/px01053860418332/fulltext.pdf>
- GGAS Website: www.greenhousegas.nsw.gov.au
- VEET website: <http://www.dpi.vic.gov.au/DPI/dpinenergy.nsf/LinkView/25F3A72717ED1F21CA2572B2001BF39D866B51F390263BA1CA2572B2001634F9>
- REES website: http://www.dtei.sa.gov.au/energy/government_programs/rees