How successful have state schemes been in supporting renewable energy and energy efficiency

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www.greenenergytrading.com.au
Content

• State schemes historically underpinned expansion of the renewables target

• State energy efficiency schemes underpinning significant investment

• Renewable energy and energy schemes address market barriers and are important even with a carbon price
Who is Green Energy Trading?

- One of largest independent REC Agents / Aggregator
- Operate in REC and EE markets
- Accredited for EE in NSW & VIC
- Work with more than 500 solar and energy efficiency businesses

Our team in Hawthorn

- Research, consultancy and advisory division (Green Energy Markets)
- Energy solutions and programs (Green Energy Advantage)
1. State based RE schemes

- GreenPower launched by NSW Govt in 1997 and nationally in 2000 (demand of 2,000 GWh/a)
- When the Howard Government failed to extend the MRET in 2004 following the Tambling review, many states announced their own renewable energy schemes
## State policy actions

......targets and schemes

<table>
<thead>
<tr>
<th></th>
<th>NSW</th>
<th>Vic</th>
<th>Qld</th>
<th>SA</th>
<th>WA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market based schemes</strong></td>
<td>Greenhouse gas abatement scheme (GGAS)</td>
<td><strong>Renewable Energy Target (10% by 2016)</strong></td>
<td><strong>Gas Electricity Target (18% incr. from 13%)</strong></td>
<td><strong>Renewable Energy Target (15% by 2020)</strong> (TBC - $5.2m allocated for implementation)</td>
<td></td>
</tr>
<tr>
<td><strong>Mandated certificate schemes</strong></td>
<td><strong>Renewable Energy Target (15% by 2020)</strong></td>
<td><strong>Energy Efficiency Target (Initial focus on residential)</strong></td>
<td><strong>Renewables and Low Emission (10% by 2020)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Greenhouse reduction Targets</strong></td>
<td>60% reduction by 2050 Yr 2000 level by 2025</td>
<td>60% reduction by 2050</td>
<td>60% reduction by 2050</td>
<td>60% reduction by 2050 Yr 1990 level by 2020</td>
<td>60% reduction by 2050</td>
</tr>
<tr>
<td><strong>Green Power and offsets</strong></td>
<td>10% default for residential customers</td>
<td>Progressively increase to 25% for Govt purchases</td>
<td>Carbon neutral Govt buildings by 2020</td>
<td>20% of Govt purchases</td>
<td>By 2010 - 20% of Govt purchases</td>
</tr>
<tr>
<td><strong>Other power supply targets (non mandated)</strong></td>
<td>20% clean power (gas, clean coal and renewables) by 2020</td>
<td>Limitations on new coal generation</td>
<td>Renewables 20% by 2014</td>
<td>50% clean energy by 2010 (60% by 2020)</td>
<td></td>
</tr>
</tbody>
</table>

All states have committed to the introduction of emissions trading by 2010
State based RE schemes underwrote bi-partisan support

- In the lead up to 2007 Election – Howard Government committed to extending MRET from 9500 GWh to 30,000 GWh (and include CCS) – effectively rolled up state targets
- ALP committed to 45,000 GWh renewables target
- Only Victoria actually implemented its scheme (VRET)
- Other states folded into national scheme
VRET kept renewable industry going – stalled in other states

‘000 VRECs created by Generation year

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar (small-scale)</td>
<td>23</td>
<td>210</td>
<td>14</td>
<td></td>
<td>247</td>
</tr>
<tr>
<td>Hydro</td>
<td></td>
<td>14</td>
<td>4</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Wind</td>
<td>117</td>
<td>329</td>
<td>20</td>
<td></td>
<td>466</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
<td>552</td>
<td>38</td>
<td></td>
<td>730</td>
</tr>
</tbody>
</table>
2. State Energy Efficiency Schemes

VIC Target doubled from 2012 with Expansion to non-residential Target defined to end 2014 Assumed to continue at 5.4 million VEECs (= million tonnes of CO2-e / annum)

NSW Target rises to 5% of eligible electricity by 2014 (Power use assumed to fall by 1% pa)
Combined target of 8m certificates
Market value of ~$200m per annum
VEET and ESS schemes successful

- Reduction in electricity consumption
- Reduction in wholesale power price
- Resulted in innovative business models to roll out energy saving products to customers
- Emergence of more energy efficiency businesses servicing customers
Research Note: 1-2013

NEM power consumption in 2012 reduces by 2.5 percent

Figure 2. Total NEM electricity consumption

www.greenmarkets.com.au
Vic consumption fell by 1%
(450 GWh reduction in 2012)
Have seen market based schemes lower power consumption

• Report by the REC Agents Association
• 53% of reduction in consumption over 2008-2011 due to activities supported by market based schemes (RET, VEET and ESS)
• Schemes are working – consumption, wholesale prices and emissions lower

www.recagents.org.au
Methodologies used

- **Project Impact Assessment Method**
  Certificate creation is based on an engineering assessment of only the equipment, process, or system that is the subject of Energy Savings.

- **Metered Baseline Method**
  Certificate creation is based on the difference in measurements of the electricity consumption before and after the recognised energy saving activity has taken place.

- **Deemed Energy Savings Method**
  Certificate creation is based on common end-user equipment formulas determined by the administrator over a specific period of time.

In Victoria only Deemed Methodology used to date – other methodologies to be developed
“...to make energy efficiency improvements more affordable, contribute to the reduction of greenhouse gases, and encourage investment, employment and innovation in industries that supply energy efficiency goods and services.”

How the schemes work

**Demand Created**
- Energy retailers are required to surrender energy efficiency certificates to achieve the annual target (based on level of energy sales)

**Energy Savings**
- Range of energy efficiency activities are eligible to create certificates (based on imputed level of energy reductions – converted to GHG reduction)

**Certificate Creation**
- Certificates can only be created by an Accredited Person / Accredited Certificate Provider (need to go through approval process)

**Compliance**
- Reasonably onerous compliance and documentation requirements (ensuring robustness of the activity and energy savings)
<table>
<thead>
<tr>
<th>Economic sectoral coverage</th>
<th>Victorian Energy Efficiency Target (VEET)</th>
<th>NSW Energy Savings Scheme (ESS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Residential</td>
<td>Residential, commercial and industrial</td>
</tr>
<tr>
<td></td>
<td>Commercial and industrial (since Dec 2011)</td>
<td></td>
</tr>
<tr>
<td>Administrator</td>
<td>Essential Services Commission (ESC)</td>
<td>Independent Pricing and Regulatory Tribunal (IPART)</td>
</tr>
<tr>
<td>Scheme commenced</td>
<td>January 2009</td>
<td>July 2009</td>
</tr>
<tr>
<td>Scheme duration</td>
<td>2030</td>
<td>2020 or until a national scheme comes into effect</td>
</tr>
<tr>
<td>Cost to register a certificate</td>
<td>$1.00</td>
<td>$0.70</td>
</tr>
<tr>
<td>Final date for creation on previous years vintage</td>
<td>30 June (30 Jan for Surrender)</td>
<td>30 June (30 June for Surrender)</td>
</tr>
<tr>
<td>Certificate creator</td>
<td>Accredited Person (AP)</td>
<td>Accredited Certificate Provider (ACP)</td>
</tr>
<tr>
<td>2013 Target</td>
<td>5.4 million certificates</td>
<td>~2.6 million certificates (4.5% of annual liable electricity sales)</td>
</tr>
<tr>
<td>2012 penalty rate (before tax)</td>
<td>$42.73 ($61.04 after tax) for 2012</td>
<td>$24.86 ($35.51 after tax)</td>
</tr>
</tbody>
</table>
ESC 2012 creation and target

Balance of live certificates yet to be surrendered

- 2012 target lower boundary
- 2012 target upper boundary

27-Mar-12 20-Apr-12 16-May-12 11-Jun-12 05-Jul-12 31-Jul-12 24-Aug-12 19-Sep-12 15-Oct-12 08-Nov-12 04-Dec-12 08-Jan-13 01-Feb-13 27-Feb-13

We get it.
ESCs by activity over the last year
VEECs 2012 creation and target

The diagram shows the quantity of VEECs (in thousands) from January 2012 to March 2013. The graph includes lines for pending registration, registered, and targets for 2011 and 2012. The graph indicates an increase in both pending registration and registered VEECs over time, with a significant jump in July 2012. The 2011 target is shown as a dashed line, and the 2012 target is shown as a dotted line. The graph suggests that the targets were met by December 2012.
VEECs by activity over the last year
Harmonisation of state schemes – is happening in part?
## Commercial lighting case study

### Typical installation – small warehouse (highbays)

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<th></th>
<th>NSW</th>
<th>VIC</th>
<th>VIC % of NSW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Metal Halide fittings replaced</td>
<td>50</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Wattage per fitting + ballast</td>
<td>454</td>
<td>454</td>
<td></td>
</tr>
<tr>
<td>Total kWh (old)</td>
<td>22.7</td>
<td>22.7</td>
<td></td>
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</tbody>
</table>

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<th>VIC % of NSW</th>
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</thead>
<tbody>
<tr>
<td>Replaced with - LED highbay</td>
<td>50</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Wattage per fitting + driver</td>
<td>150</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Total kWh (new)</td>
<td>7.5</td>
<td>7.5</td>
<td></td>
</tr>
<tr>
<td>Aircon factor</td>
<td>1.30</td>
<td>1.05</td>
<td>80.8%</td>
</tr>
<tr>
<td>Energy saving per hour (kW)</td>
<td>19.8</td>
<td>16.0</td>
<td></td>
</tr>
</tbody>
</table>

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<th>VIC</th>
<th>VIC % of NSW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of hours per annum</td>
<td>4000</td>
<td>3000</td>
<td>75.0%</td>
</tr>
<tr>
<td>Number of years</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

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<th>VIC % of NSW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total saving (MWh) over 10 years</td>
<td>792</td>
<td>480</td>
<td>60.6%</td>
</tr>
<tr>
<td>Abatement factor</td>
<td>1.06</td>
<td>0.963</td>
<td>90.8%</td>
</tr>
<tr>
<td>Total number of certificates</td>
<td>840</td>
<td>462</td>
<td>55.0%</td>
</tr>
<tr>
<td>Current certificate value</td>
<td>$17,640</td>
<td>$6,699</td>
<td>38%</td>
</tr>
</tbody>
</table>
Case study variances

- The calculator factors are slightly different: with Victoria’s benefits a little lower overall.
- Victoria maintains a cap on certain lights (e.g. halogen and incandescent downlights have a maximum of 37W removed claimable).
- Victoria does not allow extended operating hours to be claimed. 3,000 hours claimable per year for a maximum period of 10 years.
- Victoria requires decommissioning evidence (e.g. recycling receipt).
- In Victoria, VEECs must be created before 30 June of the next calendar year following the installation; otherwise the opportunity to create VEECs is lost. In NSW, ESCs lose one year of deemed value if they are not created by 30 June but it is still possible to create for the remaining years.
Prices vary with supply/demand
Risk needs to be managed
3. Importance of complimentary measures

- RE and EE schemes address market barriers
- Carbon price has little impact on demand side (inelastic demand) – electricity is small component of costs
- We would otherwise have a sub-optimal level of investment in clean energy
- Supports the development of a local industry – builds capacity and capability that will be required to deliver deeper cuts in emissions
- Ensures that we reduce emissions locally (lower our carbon footprint)
- Other benefits delivered – eg reduction in peak demand
Solar PV and EE making a big difference

In Victoria

- Over 2011-2012 period an average of 175 MW per annum of residential PV installed
- Over 2011-2012 period an average of 550 GWh/a annum of electricity reductions supported by VEEC
- EnergyAustralia reported a 10% reduction in residential power use during 2012 (this is significant)
Vic Peak demand has been falling

Source: AEMO 2012 Statement of Opportunities

Figure 3-12 — Victorian summer maximum demand projections (medium scenario)
Vic Peak demand has been falling

Source: AEMO 2012 Statement of Opportunities
Vic Peak demand has been falling

Figure 3-12 — Victorian summer maximum demand projections (medium scenario)

Source: AEMO 2012 Statement of Opportunities

2010 SOO (50%) >1000 MW higher

x  9,139 MW on 4 Jan (Actual)
Conclusion

- State schemes have been pivotal in the development of the renewables industry
- Vic and NSW energy efficiency schemes driving significant investment
- Starting to see significant changes to the way that we are using energy – putting downward pressure on prices
Check out our web site for details
Subscribe to blog

ESC FAQs

1. What is an ESC?
2. Who is participating in the ESS scheme?
3. How many ESCs can I get?
4. What is an ESC worth?
5. Does it matter where the activity occurs?
6. Do I need to be registered with the IPART to create ESCs?
7. Which products are eligible?
8. What does Green Energy Trading do with my ESCs?
9. How does Green Energy Trading make their money?
10. When will I get paid?
11. How long do I have to claim ESCs?
12. Which buildings are included?
13. What are my obligations?
Thank you