Who are we? – complimentary measure under Government’s programs

Low Carbon Australia was established by the Federal Government and commenced operations in 2010

Independent public company limited by guarantee

~$100m initial funding

Low Carbon Australia manages two innovative programs:

Energy Efficiency Program - finance and advice to business for retrofit of non-residential buildings.

Carbon Neutral Program - accreditation for organisations of products or operations certified as carbon neutral under the National Carbon Offset Standard (NCOS)
LCAL’s place in the Clean Energy Future.
Company Constitution & Activities Scope.

Low Carbon Australia Limited capability map (in the CEFC space)
(with appropriate capitalisation, governance & licenses (eg APRA & Financial Services)

Scope of Low Carbon Australia Limited activities as contemplated by its Constitution

- Low Carbon Australia Limited (Delivering Australia’s Low Carbon Future)
- Energy Efficiency
- Distributed Generation & Renewables
- Power

Current scope of Low Carbon Australia Limited’s funded programs
- Market Based Incentives
- Environmental Upgrade Agreements
- On-Bill-Finance
- Leases (Operating & Finance)
- Co-Investment (Debt & Equity)
- Grants

Industry
- Non-Residential Buildings
- Industry
  - Power (Generation, Storage, Distributed Generation and Transmission)
- Transport

Agriculture & Forestry

Examples of technologies that are either currently or could be considered in relation to carbon reduction:
- Solar (PV)
- Wind power
- Bio-fuels
- Marine energy
- Geothermal
- Biomass
- Building materials
- Network efficiency
- Smart metering
- Smart grids
- Smart cities
- Efficient power IC
- Solid state lighting
- Hydrogen fuel cells
- Standby power-boards
- Lighting
- HVAC
- Motors & Drive
- Compressed Air
- Building Management Systems
A broad, but complex, array of energy efficiency policy measures already exists.

Number of existing policy measures by geography and focus:

<table>
<thead>
<tr>
<th>Primary assistance</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information</td>
<td>56</td>
</tr>
<tr>
<td>Financial</td>
<td>37</td>
</tr>
<tr>
<td>Reporting</td>
<td>13</td>
</tr>
<tr>
<td>Standards</td>
<td>13</td>
</tr>
<tr>
<td>Training</td>
<td>6</td>
</tr>
<tr>
<td>TOTAL</td>
<td>125</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Target entity*</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household</td>
<td>109</td>
</tr>
<tr>
<td>Business</td>
<td>83</td>
</tr>
<tr>
<td>Government</td>
<td>25</td>
</tr>
<tr>
<td>Education</td>
<td>18</td>
</tr>
<tr>
<td>NGO/community</td>
<td>14</td>
</tr>
<tr>
<td>Health</td>
<td>5</td>
</tr>
</tbody>
</table>

* Policy measures can target multiple entities.
LCAL will leverage and complement existing business-oriented policy measures

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Lack of awareness</th>
<th>Financial constraints</th>
<th>Implementation difficulty (technical)</th>
<th>Structural issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density of policy measures to address the barrier</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulty level for policy measures to address barriers</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
</tr>
</tbody>
</table>

Low Carbon Australia’s role

- ‘Sign-posting’ for businesses to identify and benefit from the most appropriate existing policy measures
- Provision of energy efficiency finance (On-Bill, loans etc)
- Helping governments to promote and replicate successful existing initiatives, e.g. energy efficiency audit programs
Major Opportunities for cost-effective emission reductions

- High up-front capital costs limit otherwise profitable activities
- Focus on providing financing mechanisms to overcome these constraints

Source: Climate Works Australia “Low Carbon Growth Plan & Commercial Buildings Emission Reduction Opportunities”, December 2010
Swing internationally towards revolving loan funds (and almost universal move away from government grants)

Structures being developed internationally are largely focused on:

- Direct loans (secured and unsecured);
- Operating leases;
- On-bill Financing;
- PACE (pay as you save through council rate mechanisms)

Others areas being considered:

- US: monetization of tax credits, establishment of initial loan reserves to leverage down ongoing cost of funds, establishment of secondary markets for consolidation of (and take out of) pools of funding devoted to energy efficiency, including the initial warehousing of these loans
- Europe: EE technology guarantees, Policy risk insurance, Venture Capital funds for early-stage technology development and establishment of Green Bonds as part of Green Bank (e.g. in the UK up to $2b initially committed)
Low Carbon Australia’s projects need to meet clear criteria to successfully correct the market failure in this sector – set by Government

- Deliver cost-effective carbon savings
- Delivery measurable results
- Leverage private investment
- Be ‘additional’ to business-as-usual
- Minimise delivery risk
- Catalyse future activities
- Contribute to LCAL’s Financial Sustainability

- Commercially available technologies
- Established partners
- Would not have happened in the absence of our intervention, OR
- Would have happened more slowly or on smaller scale
- LCAL is a co-investor in projects – not the sole investor

- Net cost < economy average $23/ MtCO₂e*
- Outcomes-based KPIs
- Robust measurement, monitoring & reporting

- Strong demonstration value
- Pilot projects which are scalable, replicable, adaptable
- Projects must deliver appropriate risk-adjusted rates of return while still stimulating investment in EE

* Based on Australian treasury modelling of carbon price under CPRS with target of 5% reduction on 2000 emissions by 2020
Value to the market of LCAL’s Customised finance solutions for Energy Efficiency

- LCAL’s Advantages offered to the market:
  - Longer term (up to 10 years)
  - Competitive interest rate
  - Can overcome market failures:
    - Split incentives (Landlord pass costs to tenants)
    - Up-front capital limitations
    - Matching of costs and savings
  - All building types
  - All EE technologies
  - De-risking particular investment structures
  - Innovative customised finance solutions
### Energy Efficiency Program...... Current financial solutions

<table>
<thead>
<tr>
<th>Direct finance</th>
<th>Co-finance with service providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loans - Energy Efficiency</td>
<td>Loans - Energy Efficiency</td>
</tr>
</tbody>
</table>
| **Direct loans to building owners, local councils and businesses to finance energy efficiency upgrades** | Co-financed energy efficiency improvements for building owners and tenants. Benefits:  
- Increase asset value,  
- Attract higher quality tenants  
- Better rental returns,  
- Owners and tenants realise energy cost savings opportunities.  |
| | Equipment Leases - Energy Efficiency |
| | Overcome constraints to businesses of providing up front capital for energy efficiency equipment  
Benefits:  
- Flexibility for owners and tenants to upgrade as technology improves  
- Removes residual value risk of the asset for lessee.  |
| | On-bill Financing - Energy Efficiency |
| | Enables businesses to install and upgrade energy efficiency equipment, financed by a utility, with repayments through monthly utility bill.  
Benefits:  
- Removes the requirement for upfront capital for energy efficiency equipment  
- Repayments typically equal to or less than the energy cost savings achieved.  |
| | Environmental Upgrade Agreements (EUAs) |
| | Building owners can access finance for environmental upgrades to buildings under an EUA agreement between the building owner, a finance provider and local council. Repayments are structured through a council levy on the property, with the council forwarding payments to the finance provider. Benefits:  
- Overcome difficulties for building owners in providing upfront capital  
- Allow for structured payments that remain with the property if ownership changes.  
- Building owners may pass on repayment costs to tenants who benefit from reduced energy costs and a more environmentally efficient workplace.  |
Environmental Upgrade Agreements-
NAB and Eureka Funds Management

Legislation enabling Environmental Upgrade Agreements has been enacted for the City of Melbourne and in NSW.

NAB, Eureka Funds Management and Low Carbon Australia have developed the NAB Environmental Upgrade Loan program anticipated to grow well beyond $50 million over the next two years.

Supporting the energy efficiency retrofit of non-residential buildings in Melbourne under the $2 billion City of Melbourne 1200 Buildings program and in Sydney and regional NSW cities

> potential for this type of financing to be implemented Australia-wide.
Up to $100 million of financing available under a new Energy Efficiency Equipment Lease (E3 Lease) from Low Carbon Australia and Alleasing.

Includes HVAC, LED and other lighting systems and Building Management Systems.

The E3 lease will benefit any business looking to reduce energy costs and GHG emissions including REITS, private owners, office, retail, commercial, industrial, university, hospital and local government.

Benefits of the E3 Lease include:

1. 100% of Energy Efficiency equipment acquisition cost with no capital outlay by end-user/lessee
2. Flexibility to move to newer technology as it becomes available, in a rapidly evolving industry
3. Preserves capital in the business by eliminating capital expenditure requirements
4. May eliminate ‘split incentive’ issues
On-bill Financing –
Origin Energy & Low Carbon Australia

Origin Energy are Australia’s largest Energy (electricity and gas) Retailer – private company servicing residential, commercial and industrial customers.

Origin Energy and Low Carbon Australia are co-funding delivery up to $12.7 million in energy efficiency upgrades for their business customers.

Customers can access energy saving equipment without up-front capital expenditure.

Provides business customers end-to-end service to reduce their energy use and costs, identifying energy saving opportunities and technologies.

Structured finance and repayments to lower the cost for business of energy efficiency technologies.

Being marketed to Origin’s ~15,000 business customer sites in non-residential industry, distribution and infrastructure properties nationally.
How the alliance with Origin works

Low Carbon Australia provides a direct loan to Origin Energy which it then uses to fund customer energy efficiency opportunities.

The cost of finance is lower, and the term of the loan often longer, than Origin Energy would otherwise be able to offer, meaning more projects are cost effective.

Origin Energy then recovers the loan repayments through the customer’s utility bill.

An ‘On-bill finance’ mechanism successfully adopted in the US.

Origin Energy provides a turnkey solution - spanning opportunity identification, implementation and resulting in a guarantee of energy savings.
The 4-Step Process

Origin follows a 4 step process with a guaranteed solution, for business:

1. No-obligation site visit and Energy Use Review
2. Detailed proposal with Low Carbon Australia funding options
3. Project implementation with an Energy Savings Guarantee (+/- 20%)
The Customer Benefits – overcoming the following barriers

Financing repayments are structured to deliver cost neutral or positive returns to your business – with repayments typically equal to or less than the energy cost involved.

Origin provides a business with a complete end-to-end service, identifying energy saving opportunities and facilitating the implementation of energy efficiency technologies specific to business needs.

Origin measure and verify that the energy savings have been realised post implementation.

Using Low Carbon Australia finance, Origin’s Energy Savings Guaranteed product achieves efficiency dividends with no upfront expenditure.
Example ESCO Solution being considered by LCAL, includes energy savings guarantee

ENERGY SAVING MEASURES SUMMARY TABLE

<table>
<thead>
<tr>
<th>Energy Saving Measures</th>
<th>Area</th>
<th>Total Annual Savings</th>
<th>KVA Peak Demand</th>
<th>MW/hour Annual Savings</th>
<th>Co2 Annual Savings</th>
<th>Investment ex GST</th>
<th>Return on Investment</th>
<th>Pay Back Years ex Funding</th>
<th>Pay Back Years with Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refurbish Light Fittings</td>
<td>Various</td>
<td>$19,077</td>
<td>48</td>
<td>138</td>
<td>182</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluorescent Lighting Voltage Reduction Units</td>
<td>Various</td>
<td>$7,046</td>
<td>18</td>
<td>56</td>
<td>74</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lighting Controls</td>
<td>Various</td>
<td>$35,692</td>
<td>0</td>
<td>329</td>
<td>436</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install 7 day Timers</td>
<td>Various</td>
<td>$987</td>
<td>0</td>
<td>10</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotary Frequency Inverter Controls</td>
<td>Various</td>
<td>$26,849</td>
<td>24</td>
<td>280</td>
<td>371</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL ENERGY</td>
<td></td>
<td>$89,651</td>
<td>90</td>
<td>813</td>
<td>1076</td>
<td>$235,271</td>
<td>38%</td>
<td>2.6</td>
<td>4.0</td>
</tr>
</tbody>
</table>

ENERGY SAVING PROJECT CASHFLOW SUMMARY TABLE

<table>
<thead>
<tr>
<th>Estimated Monthly Savings</th>
<th>Monthly Payment for 48 Months</th>
<th>Positive Monthly Cashflow</th>
</tr>
</thead>
<tbody>
<tr>
<td>$</td>
<td>$7,470.00</td>
<td>$6,363.00</td>
</tr>
</tbody>
</table>
Typical project improvements considered include:

- Light fitting refurbishments and replacements
- Voltage regulation devices, both for selected lighting and whole of sites
- Lighting controls
- Building Management system optimization and replacement
- Efficiency upgrades to Heating, Ventilation and Air Conditioning systems
- Variable speed drives on fans and pumps run by smart controls
- Power Factor Correction
- Chiller control upgrades
- Efficiency upgrades on travelators and lifts
- Building Fine Tuning / Control Strategy implementation
- Cogen-Trigen
- Real Time Energy & Water Building Monitoring / Sub metering with monthly site facilities management energy discussions
### Typical projects under consideration – both high and low payback projects

<table>
<thead>
<tr>
<th>Technology</th>
<th>Cost</th>
<th>Savings (pa)</th>
<th>Additionally</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-generation</td>
<td>$4.8m</td>
<td>$750,000</td>
<td>Below IRR for project approval</td>
</tr>
<tr>
<td>Roof paint technology</td>
<td>$160,000</td>
<td>$30,000</td>
<td>Payback for project is 5 years, but max loan term offered by bank is 3 years</td>
</tr>
<tr>
<td>Lighting in cold storage (Induction and LED lighting)</td>
<td>$375,000</td>
<td>$50,000</td>
<td>Payback for project above normal criteria to investment</td>
</tr>
<tr>
<td>Chiller upgrade</td>
<td>$1.5m</td>
<td>$187,000</td>
<td>8 year ROI. Payback for project above normal criteria to investment. Peak demand savings.</td>
</tr>
</tbody>
</table>
Benefits to a Utility of this type of approach – lessons learnt

Providing added value to their business customers therefore more likely to retain and acquire new customers

Recognise the substantial activity in the energy efficiency sector and the opportunity to be a significant player – or risk losing out to others

Demonstrate a Utility’s credentials in the sustainability space through positive action, staying ahead of regulatory requirements
The Future for Low Carbon Australia – what have we learnt is key?

> Help business stay competitive in the face of rising energy prices and access carbon reductions at least cost

> Create new financial vehicles to catalyse private sector investment across industry sectors and other innovative programs

> New strategic alliances and a flow of new energy efficiency project financing

> Pipeline of project finance to help small, medium and large businesses and the public sector

> Revolving fund approach with flexibility for tailored financial support:
  > continuity
  > market driven
  > overcomes barriers that other Government interventions have not
  > savings to business with cost effective carbon reductions
  > capacity to expand and broaden approach for industrial and other sectors.
THANK YOU

You can find out more at