



# **WWF Submission to the Multi-Party Climate Change Committee: Carbon Price Mechanism**

**May 2011**





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## INTRODUCTION

WWF welcomes the opportunity to submit its views to on the proposed broad architecture and critical elements of a carbon pollution price mechanism.

WWF-Australia is part of the WWF International Network, the world's largest and most experienced independent conservation organisation, with 80,000 supporters in Australia, five million supporters world wide and a global network active in more than 100 countries. WWF's mission is to stop the degradation of the planet's natural resources and to build a future in which humans live in harmony with nature. WWF has been an advocate for national and international action to avoid dangerous climate change for more than two decades.

WWF made a submission to members of the Multi-Party Committee on the 18<sup>th</sup> of February 2011, on design options for the price scheme. The attached submission is in part a response to the high level architecture announced by the MPCC on the 24<sup>th</sup> of February 2011 and our position on other critical features including the interaction of a price scheme with the Carbon Farming Initiative and complementary measures.

## AUSTRALIA AND THE WORLD NEEDS TO ACT TO REDUCE CARBON POLLUTION

Already, endangered species and threatened habitats in Australia and around the globe are suffering the impacts of climate change. Climate change is devastating for iconic species – like marine turtles, polar bears and pandas – and precious ecosystems like the Great Barrier Reef. Without action scientists predict between 25-30% of species will become extinct. Climate change also deeply affects humans. Climate change impacts on our health, causes more extreme weather events, is reducing food production in Australia, and is hurting parts of our economy.

In 2009 Australia joined with the world's biggest and smallest economies to sign the Copenhagen Accord to limit global warming to 2 degrees above pre-industrial levels, with an agreement to undertake a review to consider a limit on warming of 1.5 degrees (WWF believes it is in Australia's and the world's best interest that global warming is limited to 1.5 degrees). Other countries have made significant progress towards cutting their pollution by effectively putting a price on pollution and investing in clean technologies. Australia however, after decades of limited action, remains a laggard. A recent report commissioned by WWF suggests that Australia could have access to some of the world's cheapest renewable energy, putting us in a position to attract energy intensive industry to Australia<sup>1</sup>. Yet Australia is the highest greenhouse gas polluter per person of all developed countries<sup>2</sup> and the 15th highest overall polluter<sup>3</sup> - and our emissions are still rising.



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We have the solutions! Australia has access to abundant wind, solar, geothermal and wave power, and we have the skills and ingenuity to implement the solutions, we just need to reflect the true cost of greenhouse gas emissions and provide incentives to drive low polluting energy, products and services.

The longer we delay the more it will cost our economy, society and environment.

If Australia is going to contribute fairly to the global effort to prevent dangerous climate change and be competitive in a carbon constrained world we must legislate scientifically recommended pollution targets and implement mechanisms that will achieve the reductions. As a priority the federal parliament must:

- 1) Legislate a 2050 pollution reduction target of at least 90 per cent from 1990 levels by 2050, as indicated by science will be needed to avoid 2 degree temperature rise above preindustrial levels.
- 2) Legislate 3 new independent bodies:
  - Climate Change Committee of Australia (CCCA) with responsibility for setting caps, carbon budgets, and recommending policies and methods by which carbon budgets can be achieved in covered and uncovered sectors
  - Climate Science Commission to provide advice on climate mitigation and adaptation
  - Carbon Bank Authority – to administer carbon price scheme
- 3) Implement a price on pollution. The key features of the scheme should include:
  - Fixed price 2-3 years, defaulting to a cap and trade,
  - Starting price **between** \$25 a tonne indexed at \$5.50 each year and \$40 a tonne indexed at \$3.70 a year (i.e. the lower you start, the higher the index needs to be). The initial price and escalator combined, alongside other complementary measures, must be enough to put Australia in a position to achieve at least 25 per cent emissions reductions from 1990 levels by 2020 (as indicated is required by science) with the capacity to achieve more ambitious cuts.
  - Caps set 1 year in advance by an independent authority who determines length and level of caps, with cap lengths set for 3 years in the early period.



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- In the absence of a 2020 target, implement a floor price for first 3-5 years of cap and trade scheme based on fixed price trajectory, and defer setting a 2020 target until an international agreement is reached, unless the Government agrees to 25% reduction of 1990 levels prior.
  - 100 per cent auctioning, economy-wide coverage (at least the same as the CPRS),
  - Link to Carbon Farming Initiative with conditions,
  - Significant domestic reduction through limiting international offsets (scalable to reduction target) and utilising only those with high compliance standards consistent with international agreements, that do not undermine environmental integrity of the carbon price scheme.
- 4) A budget neutral scheme with the revenue raised used for: demonstrated transitional assistance to Energy Intensive Trade Exposed Industries (EITEs); assistance to low-income earners; renewable energy development and commercialisation; international climate finance; Carbon Farming Initiative and domestic ecosystem adaptation.
- 5) Implement complementary measures including: energy efficiency; emissions standards to prevent the construction of new conventional coal power stations; support for large-scale renewable energy including a large scale feed-in-tariff or segmented Renewable Energy Target (RET); and pollution reductions in sectors not covered by the price mechanism.

Please address any questions in relation to this submission to Kellie Caught, Acting Head of Climate Change, 0406 383277 or [kcaught@wwf.org.au](mailto:kcaught@wwf.org.au)

## SUBMISSION

The attached table details WWF's position on the key design features of a carbon pollution price mechanism

Price mechanism Elements	MPCCC details as announced	WWF Position
Targets	No detail	Action to reduce Australia's greenhouse gas emissions has been ad hoc with powerful vested interests pushing to delay significant reform and policies like a carbon price, which was first considered in 1994, but delayed to allow business time to prepare. WWF believes



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		<p>one of the key barriers to serious action is the failure to legislate a long-term emissions reduction target.</p> <p>Legislating a 2050 target will oblige Australian Governments to act to reduce our greenhouse gas emissions (there is currently no obligation other than our Kyoto obligations to 2013). It would provide Governments and business a framework to make decisions, including:</p> <ul style="list-style-type: none"> <li>• Near-term and medium-term targets,</li> <li>• Investment (noting that some investments such as power are made based on a 20 year horizon); and</li> <li>• What speed the economy can and should move at, including the economic consequences of delaying action.</li> </ul> <p>Setting a 2050 target could also resolve the current political impasse around a 2020 target and the consequent impact the political impasse is having on scheme design.</p> <p>WWF recommends the Government set a 2050 target of at least 90 per cent by 2050, in line with Australia's commitment to the Copenhagen Accord which agreed to limit global warming to 2 degrees above pre-industrial levels, and to review the possibility of a limit on warming of 1.5 degrees. This commitment requires stabilisation at 450ppm in the first instance declining to 350ppm to limit warming to 1.5 degrees. Garnaut calculated for a 450ppm scenario Australia would need to legislate national<sup>4</sup> pollution reduction targets of:</p> <ul style="list-style-type: none"> <li>○ At least 25 per cent from 1990 levels by 2020<sup>5</sup></li> <li>○ At least 90 per cent from 1990 levels by 2050<sup>6</sup></li> </ul> <p><b>WWF recommends:</b> As a matter of priority the Government legislates a 2050 emissions reduction target, preferably at least 90 per cent of 1990 levels by 2050, as recommended by science, noting it may need to be higher to keep the option of limiting warming to 1.5 degrees alive.</p>



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Administration	The Government	<p><b>WWF recommends:</b> Not support</p> <p>WWF supports the creation of independent agencies to ensure Australia's efforts to reduce Greenhouse gas emissions are informed by scientific, economic, clean energy and policy development experts with a level of distance from political influence. This is not unlike monetary policy in Australia with the Reserve Bank of Australia, and the UK's Climate Change Committee.</p> <p>WWF recommends the Government legislate 3 independent authorities:</p> <ol style="list-style-type: none"> <li>1) <b>Committee on Climate Change Australia (CCCA)</b> – modelled on the successful UK Climate Change Committee established under the Climate Change Act (2008), the CCCA would seek advice from a Climate Science Commission (see below), and have responsibility for: <ul style="list-style-type: none"> <li>• Setting carbon price caps,</li> <li>• Recommending the level of national interim carbon budgets (for covered and uncovered sectors) in line with science,</li> <li>• Monitoring emission reductions,</li> <li>• Recommending policies and methods by which carbon budgets can be achieved in covered and uncovered sectors,</li> <li>• And providing advice on whether the 2050 target should be higher, in line with science.</li> </ul> </li> <li>2) <b>Carbon Bank Authority</b> – in accordance with Government guidelines, administer the carbon price mechanism, including: <ul style="list-style-type: none"> <li>• Make decisions about levels of assistance to industry,</li> <li>• Assess and advise when certificates from other trading schemes meet established prudential standards to be accepted for surrender in Australia,</li> <li>• Assess the impact of other trading schemes accepting Australian created permits for</li> </ul> </li> </ol>



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		<p>surrender in their schemes and devise measures to respond to these actions outside their direct control,</p> <ul style="list-style-type: none"> <li>• Advise on level of international offsets,</li> <li>• Distribute scheme revenue,</li> <li>• Purchase credits from Carbon Farming Initiative (CFI),</li> <li>• Debt issuance – help accelerating development of technologies by providing capital to investments that are too risky or where the returns on investment fall outside commercial risk appetites.</li> </ul> <p>3) <b>Climate Science Commission</b> – monitor climate change science and provide independent advice to the proposed Committee on Climate Change Australia (CCCA), federal, state and local government on climate mitigation and adaptation.</p>
Start date	1 July 2012	<b>WWF recommends:</b> Support
Length of fixed price period	3-5 years	<p><b>WWF recommends:</b> Not support</p> <p><b>WWF recommends:</b> Length of fixed period should be limited to 2-3 years.</p> <p>WWF supports a fixed price period because as noted by economist Frank Jotzo, “a fixed price in the near-term can end costly delays in carbon pricing while dealing with uncertainties about Australia’s target and international markets.”<sup>7</sup> However, WWF recommends the fixed price period be limited to 2-3 years for the following reasons:</p> <ol style="list-style-type: none"> <li>1) The provision of certainty around pollution reduction targets - by setting a pollution cap that tightens over time to meet a target, a cap-and-trade scheme provides confidence that significant reductions will be made in the time required. A price on pollution without limits or caps does not provide the Australian Government or the international community with confidence that Australia can meet its national and international pollution targets.</li> </ol>



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		<ol style="list-style-type: none"><li>2) Minimise national budgetary risk - because other pricing schemes do not have a cap on pollution there is a real risk that Australia could fail to meet international targets, which would require the Government to purchase international emissions units at a cost to the domestic budget.</li><li>3) Deliver least cost abatement in covered sectors - in addition to providing the financial incentive to find the most cost effective forms of abatement, a cap-and-trade scheme allows trading amongst participants and across markets to find the most cost effective form of abatement.</li><li>4) Send a long-term price signal for large-scale investment - the <i>long-term</i> price signal inherent in a cap-and-trade scheme allows industry to begin investing and planning now to make the large transformational change that will be required.</li><li>5) International linkage - a cap-and-trade framework was strongly advocated by Australia (and the United States) during the international negotiations leading up to the Kyoto meeting in 1997. Thirty two developed countries operate a cap-and-trade scheme, including 10 US states with a further 11 US states starting a scheme in 2012. International linkage can provide benefits including:<ul style="list-style-type: none"><li>○ More cost effective abatement,</li><li>○ Promotion of technology transfers to developing countries,</li><li>○ Encouragement of other industrialised economies to also implement a price on pollution,</li><li>○ Support for an efficient global response to climate change.</li></ul></li><li>6) Delay opens the possibility of strategic lobbying behaviour by major emitters to keep the fixed price low.</li><li>7) Harder to unwind – a carbon tax would be easier to abolish than a cap and trade scheme</li></ol>



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		where business have liabilities and have made long-term investment decisions.
Initial fixed price	Initial fixed price level driving economic transformation, low pollution technology and greenhouse gas reduction	<p><b>WWF recommends:</b> Support principles</p> <p>WWF supports a starting price that puts Australia on a pathway to achieve at least 90 per cent emissions reduction by 2050, and ideally puts Australia on a pathway to achieve at least 25 per cent national emissions reduction target by 2020.</p> <p><b>WWF recommends:</b> The starting price is (a) high enough and (b) indexed at a sufficient rate, that it will allow Australia to meet the upper end of its conditional 5-25 per cent by 2020 target and put Australia on a pathway to achieve at least 90 per cent reduction by 2050, so as to keep the option open for ambitious international negotiations. The index rate will be inversely correlated with the starting price, so if the starting price is low it must be indexed at a high rate. Also noting that a lower price would require greater investment in complementary measures to deliver the necessary domestic economic transformation</p> <p>WWF therefore recommends starting price of <b>between</b> \$25 a tonne indexed at \$5.50 each year and \$40 a tonne indexed at \$3.70 a year, with the index/escalator being outlined in a schedule (see attachment 1 for greater detail).</p> <p><b>WWF recommends:</b> The fixed price index/escalator as recommended above becomes the floor price for the first 3-5 years of cap and trade scheme, to provide a level of investor certainty. The escalator should not be able to be revised down, but instead and as recommended by Jotzo (2011)<sup>8</sup> the escalator should be accompanied by a mechanism to increase the trajectory after 2015 if emissions are not trending down or if there has been a change in the international context that requires a more ambitious trajectory.</p> <p><b>WWF recommends:</b> WWF does not support a starting price of less than \$25 a tonne with an index less than \$5.50 each year, as it would:</p>



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		<ul style="list-style-type: none"> <li>• Make the ability to increase the price to meet the upper end of the Governments 5-25 per cent difficult and potential disruptive to the economy,</li> <li>• Require enhanced complementary measures to deliver the necessary domestic economic transformation.</li> <li>• Put Australia out of step with the international carbon price and make the scheme less efficient, (the EU scheme is currently around AU\$22 a tonne),</li> <li>• Be inconsistent with the price of even a 5 per cent by 2020 pathway as modelled by Treasury which would require the price to be \$24 a tonne by 2012.</li> </ul>
Fixed price escalator	Predetermined fixed price increase	<p><b>WWF recommends:</b> Conditional Support</p> <p>As indicated above WWF supports the use of a fixed price escalator. Support for the level would depend on:</p> <ul style="list-style-type: none"> <li>• The initial starting price,</li> <li>• The rate of increase (puts Australia on a pathway to achieve at least 25 per cent national emissions reduction target by 2020),</li> <li>• The length of the fixed price if the two issues above were inappropriate.</li> </ul> <p>(see “initial fixed price level” for more details).</p>
Transition arrangements	At the end of fixed price period, the “clear intent” would be to convert to a cap and trade scheme, based on a review	<p><b>WWF recommends:</b> Support, shift to cap and trade scheme. Do not support, basing decision on a review.</p> <p>WWF does not support making the decision to transition to a cap and trade scheme based on a review. The shift should be time-bound and not decision based, for the reasons outlined in response to “length of fixed price period” above.</p> <p><b>WWF recommends:</b> Shift to cap and trade within 2-3 years by default.</p> <p><b>WWF recommends:</b> in the absence of a acceptable 2020 target, cap set for 3 years</p>



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		<p><b>WWF recommends:</b> The fixed price index/escalator as recommended earlier becomes the floor price for the first 3-5 years of cap and trade scheme. The purpose of the floor would be to provide a level of investor certainty in the absence of a 2020 target. The escalator should not be able to be revised down, but instead and as recommended by Jotzo (2011)<sup>9</sup> the escalator should be accompanied by a mechanism to increase the trajectory after 2015 if emissions are not trending down or if there has been a change in the international context that requires a more ambitious trajectory.</p> <p>If a company uses international permits to meet domestic liability they will be required to pay the difference between the floor price and the international price only if the international price is lower. As international and domestic price will fluctuate over time the fee will be variable.<sup>10</sup></p>
	Option to defer commencement of flexible price	<p><b>WWF Recommends:</b> Do not Support</p> <p>(see “length of fixed price period” for more information)</p>
	Setting 2020 target no later than one year before move to floating price	<p><b>WWF Recommends:</b> Do not Support</p> <p><b>WWF recommends:</b></p> <ul style="list-style-type: none"> <li>• <b>Cap setting</b> - a year in advance of moving to a floating price the length and level of the cap would be set after an assessment by an independent statutory authority established for this purpose (i.e. The Climate Change Commission of Australia, see “administration” above for more information). WWFs preference is for the cap period to be limited to 3 years in the early stages of the scheme, until an acceptable 2020 target has been agreed.</li> <li>• <b>Target setting</b> – Australia’s final 2020 target should not be defined before our international obligations are clear unless the Australian Government agreed to 25 per cent emissions reduction of 1990 levels target prior to a final international agreement/obligation was agreed, and where the 2020 target could be increased if an</li> </ul>



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		international obligation was more ambitious.
Coverage	All six greenhouse gases under Kyoto Protocol	<b>WWF Recommends:</b> Support
Coverage	Sectoral coverage including stationary energy, transport, industrial processes, fugitives and non-legacy waste.	<p><b>WWF Recommends:</b> Support in-principle</p> <ul style="list-style-type: none"> <li>• Where coverage is not practicable, equivalent policies should be implemented in uncovered sectors.</li> <li>• WWF would like to see an agreement to gradually include agriculture in the scheme, noting that NZ<sup>11</sup> has included elements of agriculture in its scheme from 2015, also noting that the Government’s Carbon Farming Initiative (CFI) creates the legislative foundations to enable the land sector to participate in the carbon market. Professor Garnaut argues that “eventual movement toward full coverage of the land sectors under a carbon pricing mechanism would help to reduce the cost and raise the ambition of mitigation for Australia.”<sup>12</sup></li> </ul> <p><b>WWF recommends:</b> a review no later than 2015, with a discussion paper prepared in 2014, to consider a phased in approach of agriculture.</p>
Coverage	Carbon-Farming Initiative	<p><b>WWF Recommends:</b> Conditional Support</p> <p>The land and agriculture sectors in Australia account for nearly 25 per cent of Australia’s emissions, the second highest behind electricity. While NZ will include elements of agriculture in its scheme from 2015, the coverage of agriculture in Australia remains a challenge because of the lack of methodologies and abatement solutions in some areas, and as noted by Garnaut “the large number of entities raises the costs of establishing the points</p>



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		<p>of obligation close to the points where producers make the decisions that determine emissions.”</p> <p>In WWFs various submission to the CFI consultation process, WWF has noted the CFI provides not just carbon abatement opportunities but also the opportunity to produce other environmental benefits such as habitat protection, improved biodiversity, and improved water quality. For this reason WWF has been supportive of the CFI and if integrity standards are adequate, WWF would in-principle support linking the CFI to the price mechanism.</p> <p>WWF acknowledges that the Government’s proposed Carbon Farming Initiative (CFI) can:</p> <ul style="list-style-type: none"> <li>• Encourage emissions reductions that assist in lowering overall costs of mitigation;</li> <li>• Help to develop human and institutional capacity for reducing emissions in uncovered sectors; and</li> <li>• Create the legislative foundations to enable the land sector to participate in the carbon market.</li> </ul> <p>However as Garnaut notes, “a poorly designed and implemented offset scheme can allow abatement to be credited where there are no real reductions in emissions.”<sup>13</sup> Especially when many of the carbon farming initiative activities being considered under the Carbon Farming Initiative do not yet have internationally recognised standards developed.</p> <p>WWF in its recent submission to the House of Representative and Senate inquiries<sup>14</sup> into the CFI and related Bills raised concerns the integrity standards originally proposed in the CFI Consultation Paper and Exposure Draft have been weakened considerably including:</p> <ul style="list-style-type: none"> <li>• Project level additionality tests including financial additionality have been removed. Activities will now be subject to a “Common Practice” test for additionality which remains to be defined and may not provide what WWF would consider a strong enough standard.</li> <li>• The proposed legislation has eliminated the need for activities to meet standards for leakage which were included in the Exposure Draft and the design consultation paper.</li> </ul>



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		<p>WWF considers it essential that adequate and accepted leakage standards be established for activities undertaken under the CFI.</p> <ul style="list-style-type: none"> <li>• Reporting requirements have been reduced. WWF has particular concerns on assuring perpetuity for sequestration projects since reporting requirements for sequestration projects that have reached maturity and are no longer generating ACCUs has been removed.</li> </ul> <p>Unless activities to be undertaken under the CFI meet adequate standards and are effectively monitored and reported, there can be little certainty that expected emission reductions will be achieved. WWF recommends the Government and the MPCCC support the recommendations outlined in appendix 2.</p> <p>WWF recognizes that as a voluntary mechanism the CFI may have limited activity if the credits can only be sold on the voluntary market where the price is relatively low compared to potential compliance costs and associated risks. In addition some may choose to withhold participation in the scheme until a more attractive price presents itself. Linking the CFI to the price scheme provides a stronger price incentive for abatement in the land and agriculture sector.</p> <p>However some have expressed concerns that the opportunities for low-cost sequestration in the land sector may be so large that the purchase of Kyoto credits at low prices by liable parties would reduce the pressure to reduce their own emissions and by default emissions in energy and industrial sectors, where WWF and others would argue it is important that emissions reductions occur in the early years. Although we note that the Department of Climate Change and Energy Efficiency recently released a discussion paper suggesting that abatement opportunities “likely to be achieved” are less than what could “technically” be achieved.<sup>15</sup></p> <p>Garnaut in his update paper 4 notes that, “The scheme may reveal large opportunities for low-cost abatement in the land sector. Only time and experience with incentives for sequestration will tell.” He goes on to argue that despite potential for low cost abatement</p>



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		<p>there would in the end be little price difference between the fixed carbon price and the offset price, “However, it is unlikely that the price for offsets would be pushed significantly below the fixed price proposed by the Australian Government for the early years of carbon pricing in Australia.</p> <p>It is therefore unlikely to reduce pressure for reductions in emissions by liable entities under the carbon pricing scheme: they would face the same prices for emissions as they would in the absence of the Carbon Farming Initiative.” Garnaut goes on to suggest that first, it will take some time for possible participants in the Carbon Farming Initiative to learn about the possibilities and to integrate the opportunities into farm and land management systems; and second, there would be competitive pressure for liable entities to offer prices close to the fixed carbon price until the obligations of liable firms were being met entirely from offsets.</p> <p>There are a number of ways that the CFI could be linked to the price mechanism.</p> <p>Garnaut in update paper 6<sup>16</sup> suggests the CFI and price mechanism may interact in the following way:</p> <ul style="list-style-type: none"><li>• Liable entities could purchase Kyoto offset credits directly, to meet all or part of their liability; and</li><li>• Non-Kyoto offset credits could be purchased by the regulatory authority, to a certain volume or value, using some revenue from the sale of emissions permits.</li></ul> <p>WWF can see the potential economic efficiency of allowing liable entities to purchase Kyoto offset credits directly. However one of the potential values of a carbon offsets market is the ability to also maximise other environmental co-benefits<sup>17</sup> and WWF believes it is unlikely that liable entities would also value environmental co-benefits if there was an additional cost or requirement associated. Therefore WWFs preference would be for both Kyoto and non-Kyoto offset credits be purchased by the regulatory authority to a certain volume or value using the revenue from the sale of the emissions permits and that preference be given to</p>



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		<p>offsets with high environmental co-benefits (appropriate guidelines would need to be regulated by the Government, which the authority would need to consider when purchasing offsets).</p> <p>Garnaut argues that, “A limit to both interactions [purchasing of Kyoto and non-Kyoto credits], especially in the fixed price period is desirable for budget neutrality purposes and to ease anxieties about the undermining of the abatement effort. In the early years, the generation of offsets from the land sector will be rising from a low base.”<sup>18</sup> Garnaut therefore recommends, “A limit of 4 per cent in 2012, rising by 0.75 percentage points per cent a year to 10 percent in 2020 is suggested for permits used by liable entities to acquit their responsibilities through the use of Kyoto-compliant offsets. A limit of 2 per cent in 2012, rising by 0.25 percentage points per cent each year to 4 per cent in 2020 of the total permit revenue is suggested for purchase of non-Kyoto credits by the regulatory authority.”<sup>19</sup> In principle WWF supports the percentage of permit revenue outlined by Garnaut which is essentially 6 per cent in 2012 increasing to 14 per cent by 2020, with the recommendation that the quantities are reviewed periodically.</p> <p>And finally, WWF notes that there is an opportunity here to deliver broader environmental outcomes and gain greater support and broader participation from the conservation, indigenous and rural communities for the CFI if the opportunities can come to fruition. WWF notes that while linking the CFI to a price mechanism will provide greater incentives for actions that have carbon and environmental co-benefits, a carbon price may not in every instance lead to improvements in biodiversity or other ecosystem services. As noted by Garnaut, “while establishing or restoring a native forest or woodland might support a rich and diverse ecosystem, the mass planting of a single species of tree would not. Forest growers could favour carbon forests comprising a single species over bio-diverse forests because lower establishment costs and higher carbon sequestration rates can make them more profitable. WWF supports the recommendations of Garnaut that “additional incentives need to be developed specifically to encourage the conservation of biodiversity and ecosystem services”<sup>20</sup>, as outlined in our submission to the CFI consultation paper in January 2011.</p>



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		<p>In summary:</p> <p><b>WWF recommends:</b> As outlined above, WWF recommends a review, to consider the phasing in of agriculture, is undertaken no later than 2015, with a discussion paper prepared in 2014.</p> <p><b>WWF recommends:</b> the Government and the MPCCC support the recommendations to improve the integrity standards of the Carbon Farming Initiative as outlined in attachment 2.</p> <p><b>WWF recommends:</b> during the fixed price period both Kyoto and non-Kyoto domestic land and agriculture offset credits be purchased by the regulatory authority (rather than liable parties) to a certain volume or value using the revenue from the carbon tax and sale of the emissions permits, and that preference be given to offsets with high environmental co-benefits.</p> <p><b>WWF recommends:</b> during the fixed price period, a limit of 4 per cent of permit revenue in 2012, rising by 0.75 percentage points per cent a year to 10 percent in 2020 goes towards purchasing Kyoto compliant offsets and a limit of 2 per cent in 2012, rising by 0.25 percentage points per cent each year to 4 per cent in 2020 of the total permit revenue is suggested for purchase of non-Kyoto credits by the regulatory authority<sup>21</sup>.</p> <p><b>WWF recommends:</b> under a cap and trade scheme the percentage of carbon farming offsets allowed in the scheme could increase as the level of ambition increases and should not be included in the scheme until a national target of above 15 per cent is agreed (15 per cent reduction on 1990 levels by 2020). The limits on both Kyoto and non-Kyoto credits would be removed upon full coverage of land-based activity under the scheme, at which point offset arrangements would become redundant. In the meantime carbon farming offsets should continue to be purchased by the regulatory authority from a percentage of the revenue as outlined in recommendation directly above.</p>



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		<p><b>WWF recommends:</b> an additional 2-3 per cent of the price revenue (increasing over time) be used to fund research and development of abatement opportunities and methodology development in agriculture and land sector, and establish a biodiversity and ecosystem financial mechanism (in addition to CFOC and Green Corridors) to specifically encourage the conservation of biodiversity and ecosystem services not viable under a carbon market alone. Ideally the financial mechanism would work in collaboration with something like a natural resource management plan to reinforce the regional plan and ensure the project has maximum environmental benefits and longevity.</p> <p>Australia ranks second highest after Brazil for deforestation over the past decade. Land clearing emissions have reduced considerably due to progressive adoption of land clearing laws in all the states and territories but levels still remain high, especially in Queensland, due to loopholes which allow ongoing clearing of mulga and natural regrowth forests. The CFI could lead to further reductions in land clearing, sequestering carbon and depending on design, providing biodiversity and other environmental co-benefits like retention of natural regrowth forests and reduced sediment pollution in rivers and marine environments</p> <p>However, CFI cannot be relied on as the only mechanism to reduce land clearing and ideally arrive at zero net deforestation in Australia by 2020.</p> <p>In particular, lands subject to degradation and critical to conservation of biodiversity should not by law be allowed to be cleared, and thus should not be available for credits under CFI.</p> <p><b>WWF recommends:</b> In addition to the CFI, the Federal Government work with state Governments to achieve zero net deforestation by 2020:</p> <ul style="list-style-type: none"> <li>▪ through legislative bans on clearing of either remnant or regrowth vegetation on land that is <i>subject to degradation</i>: - wetlands, high slopes, and fragile erodible soils, soils with high salinity risk, riparian areas and river banks.</li> </ul>



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Price mechanism Elements	MPCCC details as announced	WWF Position
		<ul style="list-style-type: none"> <li>▪ through legislative bans on clearing of either remnant or regrowth vegetation on land that has high conservation value, including areas critical or essential to the recovery of threatened ecosystems, or species to the point they can be delisted.</li> <li>▪ in all other areas through promotion of CFI activities</li> </ul>
Coverage	Potential to phase in proposed covered sectors	<p><b>WWF Recommends:</b> Do not support</p> <p>Phasing-in coverage would put greater burden on covered sectors and reduce economic efficiency; reduce the environmental effectiveness of the scheme; continue investor uncertainty in uncovered sectors; and goes against the principles of the MPCCC.</p>
Coverage	Potential coverage of the electricity sector via an intensity-based allocation scheme	<p><b>WWF Recommends:</b> Do not support</p> <p>Intensity-based schemes will result in:</p> <ul style="list-style-type: none"> <li>• More burden on other sectors,</li> <li>• Fiscal risks associated with leaving electricity generators outside an absolute limit on pollution,</li> <li>• Economic inefficiencies,</li> <li>• And a slow transition to renewable energy.</li> </ul>
International offsets	In fixed price period liable parties may not use international permits for compliance	<p><b>WWF Recommends:</b> Support</p>
	In flexible price phase international units	<p><b>WWF Recommends:</b> Support</p> <p>International credits used to meet obligations under Australian law should be of high quality</p>



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Price mechanism Elements	MPCCC details as announced	WWF Position
	with appropriate criteria could be used for compliance	and not undermine environmental integrity. International credits therefore should be consistent with international agreements, and where appropriate further criteria or standards can and should be imposed where there may be concerns about the integrity of international schemes.
	In advance of move to cap and trade a decision could be made to restrict the quantity of international units	<p><b>WWF Recommends:</b> Support</p> <p>Transforming Australia's economy will be critical to international competitiveness in a carbon-constrained world and if Australia needs to reduce pollution faster than previously thought. Therefore it is important that a price mechanism facilitates domestic pollution reduction from the outset.</p> <p>However WWF also recognises there will be physical and potentially economic constraints to Australia achieving significant domestic pollution reduction and that limited international offsets will be required. It is recommended that the percentage of international offsets allowed in the scheme could increase as the level of ambition increases.</p>
Domestic Offsets		See recommendations under Carbon Farming Initiative
Industry Assistance EITES		<p>WWF supports appropriate and targeted assistance to Energy Intense Trade Exposed Industry. The challenge is to find a means to provide adequate protection to ETEIs without excessively compromising the environmental outcome of the scheme as these industries account for a significant share of Australia's total emissions. WWF concedes that carbon leakage and industry contraction are real concerns for some industry but believes they have been overly exaggerated and ignore other factors at play such as exchange rates, interest rates, natural disasters, drought, political and economic stability. Generous assistance will increase the burden on other sectors.</p> <p>Energy industry assistance to EITIEs should:</p>



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Price mechanism Elements	MPCCC details as announced	WWF Position
		<ul style="list-style-type: none"> <li>• Not be based on loss of profits or asset values as a result of the pricing scheme,</li> <li>• Be made by an independent body (i.e. Carbon Bank Authority as outlined above under “Administration”) on a case-by-case basis and accompanied by a rigorous discovery process under which firms can be compelled to disclose their global business strategy, as well as the economic, social and environmental costs and benefits of providing financial support. All findings and the data relied upon, except where commercial-in-confidence should be made public on the web,</li> <li>• Take into account that the global financial buffer is no longer required,</li> <li>• Maintain investment incentives for low pollution technologies, activities and behaviours, and drive structural and technological changes in high emitting industries beyond existing global best practice. Consideration should be given to using a combination of measures including as a priority, instead of cash or permits, provide subsidies to the cost of coal for the build of renewable energy that directly supplies the facility in question. This type of assistance provides multiple benefits, including decarbonising Australia’s energy sector, growing renewable energy industry, avoiding carbon leakage, and keeping industry in Australia.</li> <li>• Be publically and transparently reported in terms of the allocation and quantity of permits, and the value of assistance,</li> <li>• Be capped to avoid excessive assistance when world primary metal and energy commodity prices are high, and be tied to regular reviews of new international policy developments. Assistance should be removed as the real and implicit pollution prices increase in competing countries,</li> <li>• Be reduced over time at a rate sufficient to drive low pollution investment and help ensure that all parts of the economy contribute equitably to reducing pollution,</li> <li>• Be targeted at the actual trade-exposed and emission intensive elements of a company’s operation, and,</li> <li>• In the absence of international trading, any assistance would require very careful calibration. In this situation, if EITIEs are not doing their fair share then the cost of</li> </ul>



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		<p>achieving targets - for example through the purchase off budget of additional international permits - will be increased and the burden shifted to other parts of the economy.</p>
<p>Industry Assistance Electricity</p>		<p><b>WWF does not support assistance for electricity generators.</b> By 2012 when the scheme is proposed to commence generators will have been on notice for 20 years that Governments would need to implement some form of carbon pricing. There have been numerous signals:</p> <ul style="list-style-type: none"> <li>• 1990 international climate change negotiations commence with Australia playing an active and prominent role;</li> <li>• 1992 Australia signed (with bipartisan support) the UNFCCC which both committed the country to carbon constraints and foreshadowed the use of economic instruments;</li> <li>• In 1994 the Commonwealth Government proposed a small levy on greenhouse emissions which was withdrawn to give industry time for adjustment and to trial voluntary approaches;</li> <li>• And so on.</li> </ul> <p>Generators that have developed or acquired carbon-intensive assets since 1990 have done so in the knowledge that governments would need to implement some form of carbon pricing within the lifetime of those assets. The original investment in generation assets built or acquired before 1990 will be fully amortised by the time that the scheme is in place. Provision of financial assistance to electricity generators would reward poor judgement or deliberate acceptance of risk without any countervailing public benefit, and would significantly reduce the funds available for assistance to low income households, investment in clean energy, the land sector and energy intensive trade exposed companies. Claims that institutional investors (like banks) would be reluctant to invest in the electricity sector are unlikely as the electricity sector is only a small portion of a bank/institutional investors' investment portfolio, and could absorb any financial loss as the cut and thrust of investing. Future investments are made on a case-by-case basis and on value to the bank/institutional investor and not because an investment went bad in the past.</p>



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Price mechanism Elements	MPCCC details as announced	WWF Position
		<p><b>IF</b> the MPCC were considering transitional assistance for the electricity sector, the following principles should be adhered:</p> <ul style="list-style-type: none"> <li>• Should be limited and time-bound and must be decided on a case by case basis based on independent auditing and advice,</li> <li>• Be tied to additional action beyond business as usual,</li> <li>• Should be designed to see the early closure of highly polluting capital stock and investment in clean energy.</li> </ul>
Household assistance		<p>WWF supports the principles for low income and vulnerable households measures identified by The Climate Institute in their submission to the MPCCC, as follows:</p> <p>Measures should:</p> <ul style="list-style-type: none"> <li>• Be targeted and prioritised towards low-income and vulnerable households;</li> <li>• Be adequate for those low income households with particularly large exposure to the pollution price;</li> <li>• Be comprehensive, that is, assistance should cover both the direct (electricity, gas and petrol) price impacts and indirect impacts (goods and services including food);</li> <li>• be indexed to reflect the impact of a pollution price on the purchasing decisions of low income and vulnerable households;</li> <li>• Be flexible enough for assistance to be increased if the price impacts on low income households are greater than expected;</li> <li>• Be delivered in ways that do not directly counteract any pollution price signal;</li> <li>• Not reduce incentives to work, and;</li> <li>• Include measures to encourage and assist households to improve their energy efficiency in cost-effective ways (see proposed Mass Energy Efficiency Homes program in Attachment 3).</li> </ul>
Complementary measures	Review existing complementary measures	<p>WWF supports ongoing use of complementary measures in covered and uncovered sectors. One of the key features of a properly designed price mechanism is that it will encourage the development of new technologies which, over time, will reduce the cost to the community of</p>



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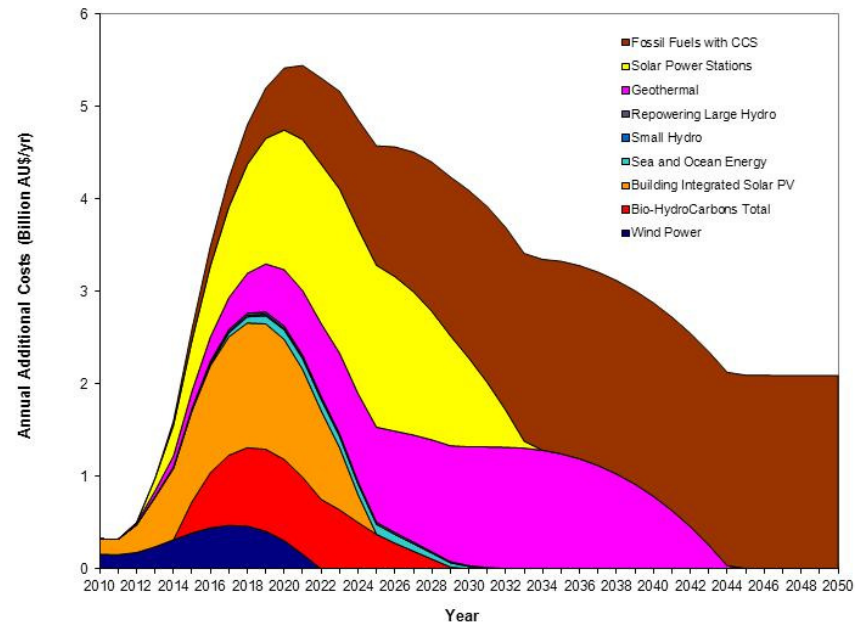
Price mechanism Elements	MPCCC details as announced	WWF Position
		<p>lowering emission levels. However complementary measures will be necessary in the early years to overcome barriers and cost hurdles and will be required until such time as the carbon price rises over time to a level sufficient to support investment in renewable energy and energy efficiency. WWF supports a clear and transparent long-term strategy around phasing these out as the carbon price rises to take the burden. Revenue raised from the pollution price scheme should be used to invest in the complementary measures.</p> <p><b>WWF Recommends the following:</b></p> <ol style="list-style-type: none"><li>1) <b>Emerging Clean Technologies:</b> WWF recommends using approximately 20 per cent of the price revenue to:<ol style="list-style-type: none"><li>a) Partially subsidise either a large scale Feed-in-Tariff<sup>22</sup> or implement a FiT or Increase segment RET,</li><li>b) Invest in grid infrastructure, including smart grids supporting distributed generation, and additional electricity network infrastructure.</li></ol></li></ol> <p>The clean energy technologies to harness the renewable energy and clean energy resources vary in maturity – some are highly mature and already becoming competitive in some markets, others are evolving quickly and others are still in the process of being demonstrated. As identified in the report Industrial Constraints and Dislocations to Significant Emission Reductions by 2050<sup>23</sup> the rate at which industries can grow (due to constraints in inputs like skills, infrastructure and resources) will be a major barrier to achieving 100 per cent clean energy by 2050. Governments will need to put in place mechanisms to start growing each of the clean energy resources as early as possible if the clean energy industries are to grow in time to contribute.</p>



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		<p>The other constraint will be cost. Figure 1 outlines the additional expenditure (compared to using fossil fuels without CCS) required for each renewable energy resource and CCS, where each cost gap is added on top of the other. This overall ‘cost barrier’ represents the annual additional expenditure – about \$2.5 billion per year on average – which is required to achieve the transition to the low carbon economy in 2050 (assuming no carbon price). The modelling indicates that with this level of additional financial assistance or incentive by 2045 all of the renewable energy resources are projected to be producing energy at or below the cost of fossil fuel generation due to the process of industries learning and economies of scale.</p> <p>Given the barriers to fully harnessing clean energy by 2050, such as constraints on industry growth rates, varying technology maturity rate and varying technology cost gaps, Governments will need to implement quite differentiated development mechanisms for each resource. A price on pollution is critical for sending an economy-wide price signal to reduce pollution and as shown in figure 2 a price will reduce the price gap</p>





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		<p>between currently low cost fossil fuels - coal, oil and gas (without CCS). If a carbon price is assumed to be in place as per modelling by Australian Treasury<sup>24</sup>(starting at \$28/tCO<sub>2</sub>e rising to \$158/tCO<sub>2</sub>e in 2050) all renewable energy sources will offer cost saving relative to fossil fuel generation before 2030 (assuming standard international industry learning rates). This means the cost hurdle to get the renewable energy resources into the market will be achieved much more quickly and at an average additional cost of \$1.5 billion per year. The cost curves in figure 2 also show that a pollution price with a starting value of \$28t will not be enough to reduce the cost gap for ALL clean technologies early enough to effectively deal with the issue of industrial growth constraints. It is important to understand that if the need to get to 100 per cent clean energy was not time bound to 2050, industrial growth rates would not be an issue and a price on pollution on its own would be enough to drive the slow transition, but the transition is time bound for the purpose of staying well below the 2 degrees warming considered by most governments to be the level required to avoid dangerous climate change. In practice Australia, like other countries, will need a number of policies to drive the</p> <div data-bbox="997 454 1869 1015" data-label="Figure"> <p>The chart displays the annual additional costs for various energy technologies from 2010 to 2050. The y-axis represents 'Annual Additional Costs (Billion AU\$/yr)' ranging from 0 to 3. The x-axis represents 'Year' from 2010 to 2050. The total cost peaks at approximately 2.6 billion AU\$/yr around 2018. The technologies contributing to these costs are: Fossil Fuels with CCS (top layer, brown), Solar Power Stations (yellow), Geothermal (magenta), Repowering Large Hydro (dark grey), Small Hydro (blue), Sea and Ocean Energy (green), Building Integrated Solar PV (orange), Bio-HydroCarbons Total (red), and Wind Power (bottom layer, dark blue). The costs for most technologies drop to zero by 2030.</p> </div>



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		<p>simultaneous delivery of each of the renewable resources. The Grattan Institute report <i>Learning the hard way: Australian policies to reduce carbon emissions</i>, found that market mechanisms such as a RET are far superior to grant or rebate schemes.<sup>25</sup></p> <p>2) <b>Energy efficiency:</b></p> <p>a) As recommended by the Task Group on Energy Efficiency, implement a National Energy Savings Initiative mandating energy retailers and large industrial energy users to achieve a set level of energy savings each year in the residential, commercial and industrial sectors.</p> <p>b) Implement a large scale energy efficiency which includes a strong focus on low income householders (see attachment 3 for details of the proposed scheme).</p> <p>3) <b>Avoid locking in high polluting electricity generation:</b> introduce electricity generation emissions standards to ensure no new conventional coal plants are built, and that all investments in new coal and gas plants move towards full commercial scale CCS post 2020. Specifically WWF recommends emission standards of:</p> <ul style="list-style-type: none"> <li>• Approximately 400-450 kg CO<sub>2</sub>e/MWh between 2011 and 2019,</li> <li>• Approximately 150-200 kg CO<sub>2</sub> e/MWh after 2020,</li> <li>• All non-peaking gas plants built must retrofit to at least 200 kg CO<sub>2</sub> e/MWh 15 years after construction,</li> <li>• Peaking gas plants that run less than 10 percent of the time would be exempt.</li> </ul> <p>4) <b>Vehicle standards and FBT reform</b> - immediately introduce mandatory fuel efficiency standards for passenger vehicles to ensure consistency with similar regulations in the US by 2014, and EU standards by 2017.</p> <p>And reform FBT for vehicles to reduce the current incentive to drive further and favour energy efficient vehicles and instead implement a two tier system that promotes low pollution cars, with 5 star accredited vehicles given a 20 per cent concession and all</p>



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		<p>other vehicles a higher rate, preferably above 40 per cent.</p> <p><b>5) Continuation of existing complementary measures</b></p> <ul style="list-style-type: none"><li>• Renewable Energy Target – retain current renewable energy target, increase to a 40 per cent target by 2030 and segment the RET to support emerging technologies (or replace with a feed-in-tariff).</li><li>• Solar Flagships</li><li>• CCS Flagships</li><li>• Solar PV feed-in-tariff, work with State Governments to create a standardised national system.</li></ul>



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**Attachment 1 – Starting Price and Escalator for Fixed Price Scheme**

The following table calculates indexation required to get to a \$70 a tonne (2011\$) by 2050, which is what Garnaut modelled for a 25 per cent reduction in emissions of 1990 by 2020, with a starting price of \$25 a tonne and \$40 a tonne (including inflation). As demonstrated in the table, both prices can get to the same target, the lower price will require steeper indexation.

<b>Carbon price (in 2011 \$)</b>										
	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average annual growth
Start price \$25	\$25	\$30.57	\$36.15	\$41.72	\$47.29	\$52.86	\$58.44	\$64.01	\$70	\$5.57
Start price \$40	\$40	\$43.70	\$47.40	\$51.09	\$54.79	\$58.49	\$62.19	\$65.88	\$70	\$3.70

<b>per cent Growth rates</b>										
	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average annual growth
Start price \$25		22 per cent	18 per cent	15 per cent	13 per cent	12 per cent	11 per cent	10 per cent	9 per cent	14 per cent
Start price \$40		9 per cent	8 per cent	8 per cent	7 per cent	7 per cent	6 per cent	6 per cent	6 per cent	7 per cent



## Attachment 2 – WWF Recommendations on Integrity Standards – Extract WWF Submission to Senate Inquiry

[http://www.aph.gov.au/Senate/committee/ec\\_ctte/carbon\\_farming/submissions.htm](http://www.aph.gov.au/Senate/committee/ec_ctte/carbon_farming/submissions.htm) WWF submission 44

### **WWF Position**

It is critical that any carbon credits generated by the scheme meet rigorous standards to assure that they truly represent a verifiable, permanent reduction of emissions. Methodologies for development and certification of the credits must take a conservative approach where uncertainty exists and be built on a scientifically credible knowledge base.

Specific recommendations made were:

- **Phasing** -that approved activities be phased-in. Activities for which accepted international standards exist, such as reforestation and afforestation should be introduced first, before activities for which methodology is yet to be established and standards set, such as for the management of soil carbon.
- **Additionality** - The project activities must be demonstrated to be additional to those that would occur under the business as usual case. Clear guidelines must be provided establishing a realistic business as usual baseline. The baseline must be estimated on a conservative basis so as not to inflate potential carbon credits. Activities that under normal business assumptions would provide an acceptable economic return could not be considered additional nor would activities required by existing regulations.
- **Permanence** - Farm Carbon credits must represent a permanent removal of carbon from the atmosphere in order to be considered as an offset against equivalent industrial emissions. WWF supports that a proportion of carbon credits be set aside as a buffer to insure against the future emission of carbon. However, as discussed in WWF's previous submission, it is considered that the 5 per cent buffer proposed is too low a general rate to adequately protect against inadvertent carbon release, in particular bush fires for forestry projects. Risk buffers must be validated through empirical research appropriate to Australian ecosystems and conditions. Moreover, the risk buffer must be large



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enough not just for present day risk but must account of the increased risk of biocarbon losses due to increased heat, drought, flood and fire in future climates.

- **Leakage** - WWF recommends that the scheme adopt procedures similar to the VCS leakage standards under which the project proponents are required to identify potential project leakage and propose mitigation to the extent possible. The level of emissions that cannot be mitigated are then to be deducted from the level of carbon credits available.
- **Monitoring and Reporting** - It is imperative that carbon abatement projects be effectively monitored and reported on to assure that carbon abatement committed to is achieved. A monitoring plan should be required which defines measurements to be taken including sampling methodology.

## **Proposed Legislation-Standards**

The scheme is focused on crediting genuine and verifiable abatement which is permanent and additional to business as usual or regulatory requirements. This is given effect by requiring methodology determinations to meet internationally consistent integrity standards. The Minister must not make a methodology determination unless a methodology is assessed and endorsed by the Domestic Offsets Integrity Committee (DOIC) *[Part 9, Division 2, clause 106(4)(b)]*

Where appropriate, the Administrator will take a light-handed approach to documentation to reduce administrative costs for the project proponent, for example, the Administrator may provide for statements to be verified by statutory declaration *[Part 3, Division 2, clause 23(2)]*.

## **Additionality**

Methodology determinations must relate to the kinds of projects that pass the additionality test *[Part 9, Division 3, clause 133(1)(a)]*. The purpose of the additionality test is to ensure that credits are only issued for abatement that would not normally have occurred and, therefore, provides a genuine environmental benefit.

Due to concerns on administrative costs, complexity and reduced appeal of schemes, the project-level additionality test, including references to financial additionality have been removed. Instead, abatement activities that are not common practice within an industry or region would be included on a 'positive list' and recognised as additional. ACCUs would only



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be issued for additional abatement, which means that ACCUs would not be available for abatement practices and activities that are already widely used by farmers or other land holders. Common practice is not defined in the legislation.

An offsets project is taken to pass the additionality test if it relates to an activity or kind of project that is listed in the regulations [*Part 3, Division 6, clause 41(1)(a)*] and is not required to be carried out under Commonwealth, State or Territory law [*Part 3, Division 6, clause 41(1)(b)*]. In other words, the regulations will list activities or types of projects which are additional. This is referred to as a 'positive list'.

## ***Permanence***

Sequestration is generally regarded as permanent if it is maintained on a net basis for around 100 years.

The risk of reversal buffer is to insure the scheme against temporary losses of carbon whilst carbon stores are recovering, and losses as a result of wrong doing by the project proponent that cannot be remedied. A risk of reversal buffer will be deducted from the ACCUs issued for sequestration projects [*Part 2, Division 3, clause 17(2)*]. The risk of reversal buffer will be 5 percent of the ACCUs issued unless another number is specified in the regulations [*Part 2, Division 3, clause 17(2)(a) and (b)*]

As a result of these adjustments, ACCUs would generally be issued for average increases in sequestration rather than temporary increases beyond this level (maximum sequestration). This provision reduces the risk that ACCUs will be issued for abatement that may not be permanent. It also makes possible a risk of reversal buffer that is lower than other voluntary offsets schemes, without compromising the environmental integrity of ACCUs.

Administrative and compliance costs have been reduced through removing reporting requirements for sequestration projects that have reached maturity and are no longer generating ACCUs.

## ***Leakage***

The proposed legislation includes no specific requirement for activities to meet leakage standards.

## **WWF comments**



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- Legislation does not consider phasing in of activities prioritising those where proven methodologies exist, such as for deforestation and reforestation.
- In order to reduce costs and provide more appeal to participants, project-level additionality tests including financial additionality have been removed. Instead activities must meet a “common practice” test to be included on a positive list for approved activities. Additionality is a key test to assure activities will reduce emissions. However “common practice” remains a flexible concept in the legislation, relying on expert judgment and further consultation. It is recommended that principles defining “common practice” should be clearly defined in the legislation and that the details in the regulations should be reviewed periodically in order to ensure that it remains an adequate test of additionality.
- WWF considers that the 100 year sequestration period for biological carbon stores as a reasonable approximation of permanence for offset credits. However the risk of reversal buffer is still considered to be too low. It is recommended that the required buffer be increased and risk adjusted depending on the project type and characteristics. For example, VCS standards recommend a 15-30 per cent buffer for a *medium risk* Improved Cropland Management Project and 40-60 per cent for a *high risk* reforestation project. Because of the legislated compliance provisions of the scheme the buffer will not need to be as high as those under VCS however lower buffers would be acceptable only if implemented together with the obligation of current and future landholders to maintain committed carbon stocks and relinquish credits if carbon stocks are destroyed.
- In the legislation, reporting requirements cease after ACCUs are issued for sequestration projects raising the question of how permanence can be assured without further reporting requirements. It is recommended that a minimum level of monitoring and reporting continue on sequestration projects until the perpetuity requirement is met.
- The proposed legislation has eliminated the need for activities to meet standards for leakage which were included in the Exposure Draft [Part 9, Division 2, clause 100 (4-g) , 102 (1-4)] and the design consultation paper. WWF considers it essential that adequate and accepted leakage standards be established for activities undertaken under the FCI. Without activities, particularly sequestration projects, meeting acceptable leakage standards, credits are unlikely to be acceptable as international offsets.



## **Attachment 3 - 3.28 Million Energy Efficient Homes Proposal Local Council Mass Energy Efficiency Grants**

Households account for 10 per cent of greenhouse gas emissions in Australia. Although building standards and appliance regulation will result in higher efficiency new building stock, these new homes will account for only 15 per cent of Australia's housing stock by 2020.<sup>26</sup> There are more than 8.1 million homes in Australia.<sup>27</sup> Household energy efficiency is the cheapest way to reduce greenhouse gas emissions, and is a premium area for jobs growth.

Barriers to increasing home energy efficiency include a lack of knowledge about important issues such as energy efficiency, the benefits of being energy efficient, how to become more energy efficient, and the costs of implementation. Moreover, current state and federal government schemes have either had limited success or are too small-scale to achieve the emissions reductions needed.

In addition to an emissions trading scheme or carbon levy by 2011 which is an essentially policy to reduce Australia's greenhouse gas emissions by a minimum of 25 per cent of 1990 level by 2020, WWF proposes a localised mass retrofit program — with an emphasis on low income households — that will reduce emissions, create jobs,<sup>28</sup> and reduce the price impact of an emissions trading scheme.

### **Review of Existing Programs**

Consultation and research was undertaken with senior members of the Commonwealth Department of Climate Change, Solar Cities managers, and Energy Efficiency experts, who investigated Australian and international programs, program proposals, and program evaluations.

A number of local, state, and federal rebate or bulk purchase programs relate to energy efficiency – including, at the federal level, the Solar Photovoltaic Scheme (now providing solar credits through the Renewable Energy Target), the Home Insulation Scheme (now the Renewable Energy Bonus Scheme), and the Solar Hot Water Rebate (now the Renewable Energy Bonus Scheme). (See Appendix 1 for a list of state and federal schemes.) While take-up has been good in some cases — such as the old Solar Rebate Scheme — overall the success of the Schemes has been limited. Many householders are not aware of the programs, they don't understand the benefits of energy efficiency and are therefore not interested in perusing rebates, or else they can't afford the cost gap. In the case of the home insulation scheme, questionable business practices and safety concerns have reduced homeowners' confidence in rebate programs.

A major weakness of rebate-only schemes is that they do not address behaviour change and may not result in long-term emission reductions. So for example, while a household may install a solar hot water system, the occupants might not have an energy efficient



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shower head, they may continue having long showers, and they may use hot water in their washing machine, requiring electricity boosters to supplement solar-generated hot water. Other behaviours and purchases in the house may also see electricity use continue to rise in other areas.

The federal government and various states have also implemented energy efficient audit schemes, which if implemented properly, could go some way toward addressing behavioural change. However, anecdotal evidence suggests that some of these auditing schemes are having only limited success. For example, the current audits for the Federal Green Homes Scheme are limited in their effectiveness because:

- They are not tailored to local conditions, home type, or behaviour;
- The action plan is neither provided in a timely manner nor developed with the homeowner during the visit;
- It is left up to the householder to further investigate suitability of recommendations<sup>1</sup> and to find recommended products and services;
- Information about federal, local, and state government rebates is not provided in the report;
- There is no follow-up to identify whether behaviour change has occurred.

The federal Solar Cities program is showing some initial success (see example below). The program varies in its activities, depending on goals of the particular city and consortium<sup>29</sup> involved in delivering the program, and includes household retrofits, direct load-control, solar parks, and large-scale solar photovoltaic on business rooftops. A number of the cities have implemented mass energy efficiency retrofits for households by undertaking localised energy audits and by providing a combination of vouchers (financial incentives) for a range of energy efficiency products or services, and bulk purchase, to reduce the cost of retrofitting. However, the Solar Cities program is a pilot program, with only seven Solar Cities, and has a large emphasis on experimentation, data collection, and testing. Because of the nature of the pilot program it is reportedly resource intensive and not suitable for a large-scale roll out; however, elements of the pilot projects could be replicable.

### **Proven Results of Mass Energy Efficiency Programs**

The Townsville Solar Cities project has had early success on Magnetic Island. Only 18 months into the project, two out of every three homes and businesses on Magnetic Island are participating in the project. One in five Magnetic Island customers who reduced their energy consumption over the six months following an assessment had reduced it by 30 per cent or more. The Magnetic Island initiatives helped achieve an 8 per cent drop in overall energy consumption on the island and a 7 per cent reduction in peak electricity demand at a time when it was expected to increase 15 per cent, resulting in total savings of 22 per cent.<sup>30</sup>

The state government-funded Victorian Energy and Water Taskforce provides an audit and retrofit service that focuses on public housing in Neighbourhood Renewal areas. According to a report by KPMG, by 2011 the taskforce will retrofit an additional 8,000



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homes with an average expenditure per home of \$700. The KPMG report notes that since commencing in 2003, the project has retrofitted over 4700 households in over 25 towns and suburbs, with average savings per household at 9 per cent on electricity bills and 16 per cent on gas bills; and financial savings are estimated to be approximately \$130 per annum per household.<sup>31</sup>

The UK Warm Front<sup>32</sup> program provides packages of between 2,700 pounds and 4,000 pounds for low-income households for costs associated with converting to more efficient heating. Households receive a comprehensive audit and retrofit. In 2004-05 the program serviced 140,000 households; and between 2000 and 2006 the program serviced 1.3 million households. Similar programs run in Scotland, Wales, and Northern Ireland.<sup>33</sup>

These programs and others<sup>34</sup> also provide evidence that programs of the nature of this proposal could be quickly scaled up to a significant level.

### **Proposal: Local Council Mass Energy Efficiency Grants**

WWF proposes that the federal government provide five-and-a-half-year grants to implement home energy efficiency retrofits to 40 per cent of homes in the target area. At least 35 per cent of the homes must be low-income households.<sup>35</sup> The aim is to implement energy efficiency measures in 3.28 million homes over eight years.

The grants are targeted at local council areas. A consortium of government, private, not-for-profit, and research organisations are eligible to apply for the grants. However, the consortium must include the local council/shire.

The consortium must match the Energy Efficiency Grant, and could include in-kind contributions to cover administration costs.

The size of the grants given to each council would vary depending on council size and would be based on a formula. The formula would need to take into account the number of homes in the local council area (with a target of 40 per cent of homes serviced), plus the percentage of low-income homes in a local council area (at least 35 per cent of homes must be low-income households).

The minimum service provided by the consortium would include:

- Providing a local shopfront-like presence
- Conducting locally tailored energy audits<sup>36</sup> with six-month and 18-month follow-ups. The audits should:
  - Be designed and implemented at a local level to take into account local geographic and climactic conditions, characteristics of the house, and behaviour of the household occupants;
  - Focus on behaviour as well as appliances and house features;



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- Access energy information of the household prior to initial and follow-up audits, preferably through an agreement between the householder and energy provider;
- Develop an action plan in collaboration with the homeowner, including what is suitable, what the home owner would like to prioritise, and what the home owner can afford. The action plan should include information on available local, state, and federal rebates and identify the “cost gap” (what the home owner would have to pay);
- Provide a list of local product suppliers and installers;
- Where possible, if the house is rented, engage the home owner.

The follow-up visits would identify energy reduction measures, review the work plan, provide additional education where needed, and update the householder on new rebates/schemes/products.

- Installing a smart metre so householders can observe their energy use
- Providing financial assistance of **up to** \$4,000 to low-income households and \$2,500 to other households, to close the gap on one or a range of major energy efficient measures. (See Appendix 2 for an outline of how the level of assistance was determined. See also Appendix 3 for a sample of measures and the level of assistance provided in the Alice Springs Solar City program.) Assistance would be limited to the most energy efficient categories of upgrades.
- Working with businesses to provide lower cost products and services. For example, the consortium could bulk buy solar hot water and solar photovoltaic, or arrange with a reputable local insulation supply to provide low cost insulation to scheme participants.
- Working with businesses and supplying a preferred product and service provider list, so households have confidence in products and service.
- Determining program effectiveness at the six-month and 18-month follow-ups, to measure changes in energy consumption and behaviour. Ongoing data collection would not be necessary.

The grant would operate for five-and-a-half years with the initial audits to be completed in the first three years. The program would be run for eight years in the first instance.

### Budget

Administration per household	\$1000
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Audit per household	\$500 <sup>2</sup>
Financial assistance per household	\$3000 <sup>3</sup>
Average total cost of scheme per household (administration, audit, and financial assistance)	\$4500
Cost to federal government per household <sup>4</sup>	\$2,250
Total cost after 8 years for 3.28 million homes <sup>5</sup> at \$2,250	\$7.380 million
Annual cost to federal government for 8 years	\$922 million

<sup>1</sup> Estimate based on consultations with Solar Cities and Department of Climate Change suggest that administration costs could be between \$500 and \$1500 per household depending on the set up, partners, and host of the project. Costs may vary per project.

<sup>2</sup> \$200 for initial visit and \$150 for follow up visits

<sup>3</sup> Cost if 35 per cent of houses are low-income homes

<sup>4</sup> Grants scheme requires matching fund from Consortium

<sup>5</sup> 40 per cent of 8.2 million households (there were 8.1 million households in 2006, we assume 8.2 million houses for the period 2010-2018)



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## Appendix 1 – Review of Existing Programs

### FEDERAL

#### Solar Credits

Solar Credits are part of the expanded national [Renewable Energy Target](#) (RET) scheme which provides extra Renewable Energy Certificates (RECs) to households, businesses, and community groups that install eligible small-scale solar, wind, or hydro electricity systems.

New small-scale solar (photovoltaic - PV), wind, and hydro electricity systems (collectively known as Small Generation Units (SGUs)) will be eligible to have multiple RECs created for the first 1.5 kilowatts (kW) of capacity. For systems over 1.5kW, households will receive single RECs (not multiple RECs) for the additional power the system will generate.

For small-scale solar systems, the number of Solar Credits the system will be eligible for depends on the location since different regions around Australia receive different amounts of sunlight (which affects the amount of renewable power the system can generate). This applies to eligible systems installed on or after 9 June 2009.

#### Renewable Energy Bonus Scheme

Households across Australia can claim \$1000 rebates for ceiling installation and solar hot water systems, and \$600 rebates for heat pumps systems, as of 1 June 2010. The Renewable Energy Bonus Scheme replaces the [Solar Hot Water Rebate](#) (previously provided \$1,600 rebate for solar hot water or \$1,000 for a heat pump hot water system) and the home insulation scheme (previously provided \$1,600) which ended on 19 February 2010.

#### Green Loans and Audits

The Green Loans program offers households across Australia access to a free home sustainability assessment and report. The report recommends specific changes that can help save money, energy, and water. Up until the 19<sup>th</sup> of February, the scheme enabled householders to access a Green Loan of up to \$10,000 to make changes recommended in the report. This has been discontinued following an [announcement](#) from the Minister for the Environment, Water, Heritage and the Arts.

### STATES

#### Feed-in-Tariff



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Most states and Territories have a feed-in-tariff which pays households for electricity imported back into the grid for a solar PV, or in some states, other small scale renewable energy systems. The amount paid back to the householder varies between states; and retailers can also choose to pay more.

## New South Wales

- **Greenhouse Gas Abatement Scheme (GGAS).** Commencing on 1 January 2003, the GGAS is one of the first mandatory greenhouse gas emissions trading schemes in the world. GGAS establishes annual statewide greenhouse gas reduction targets, and then requires individual electricity retailers and certain other parties who buy or sell electricity in NSW to meet mandatory benchmarks based on the size of their share of the electricity market. If these parties fail to meet their benchmarks, then a penalty is assigned. Project-based emission reduction activities, from which abatement certificate can be created by accredited abatement certificate providers, include activities that result in reduced consumption of electricity.
- **Energy Efficiency rebates:** Gas hot water up to \$300, solar and heat pump up to \$1,200, ceiling insulation up to \$300.

## Victoria

- **The Victorian Energy and Water Taskforce** started in 2002 and had retrofitted 4700 low-income homes at an annual cost of \$980,000 by June 2008. An additional 8000 homes will be retrofitted by 2011. The program is delivered in partnership with the private and community sector and provides training for unemployed people. Currently it provides the equivalent of 31 full-time jobs each year. Over the life of the project, it has offered 150 traineeships with 60 per cent of trainees going on to find related work.
- **The Energy Saver Incentive:** This program aims to reduce residential greenhouse gas emissions by 10 per cent per year (2.7 million tonnes). Under the scheme, energy retailers surrender energy efficiency certificates according to their share of sales. The scheme is expected to result in investment of \$210 million in the first three years of operation and to create between 450 and 900 jobs.

## Queensland

- **The ClimateSmart Home Service** costs \$50 and includes an energy audit and installation of a smart meter; and follow up e-newsletters provide energy tips and other information.
- Bulk purchase of solar rooftop photovoltaic systems and solar hot water systems.

## South Australia



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- **Residential Energy Efficiency Scheme:** Providers of electricity and gas in South Australia are now required to meet targets for improving the energy efficiency of homes. These energy providers, and their contractors, will be offering incentives to adopt energy saving measures – things like installing more efficient lighting and showerheads, draught proofing, retiring second fridges, and upgrading to more efficient appliances. The REES is intended to benefit all types of households, whether owner-occupied or rented. Energy providers are required to make sure they meet at least one third of their targets in low-income households. They must also deliver 13,000 energy audits to low-income households over three years (2009 to 2011).
- **Solar Hot Water Rebate:** Concession card holders in South Australia, who own and occupy their home, may be eligible for a rebate of \$500 for the cost of installing a new solar hot water or electric heat pump hot water system.

## Western Australia

- **[Home Energy Rebates Regional Western Australia:](#)** Regional households in Western Australia, living outside the South West electricity grid, can receive up to \$400 in rebates for energy efficient appliances including air-conditioners, fridges, and freezers by participating in the Regional Energy Efficiency Program.

## Australian Capital Territory

- **[Home Energy Assessment and Rebate:](#)** The Australian Capital Territory Energy Wise program and Home Energy Advice Team offers free advice, consultations, and workshops as well as a home energy audit, with a \$500 rebate to help ACT households save energy and make their homes more comfortable.
- **[Home Energy Self-Assessment Kit:](#)** Australian Capital Territory residents can access a home energy assessment kit from ACT Public Libraries to perform a home energy self-assessment and develop their own home energy action plans.

## Northern Territory

- **[Home Energy Rebates:](#)** Northern Territory households can claim a 50 per cent rebate, up to the value of \$200, on the cost and installation of selected energy saving items including power boards, timers and power usage meters.
- **[Solar Hot Water Installation Rebate:](#)** Northern Territory households may be eligible for up to \$1,000 with the Solar Hot Water Retrofit Rebate for replacing an electric storage hot water system with a new solar hot water system.

## Tasmania

- None



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## Appendix 2 – Estimate of Costs to Audit and Retrofit a Home

Environment Victoria has proposed a 1 Million Homes Program that aims to retrofit one million low-income homes in Victoria. The table below is modified from Table 2 in the report, *Victoria - the Green Jobs State. Seizing the opportunities*,<sup>37</sup> and provides an example of the types of energy efficiency measures that could be implemented (see also Appendix 3), the proportion of dwellings that may need a particular retrofit activity, and an estimated cost per home.

<b>Retrofit Activity</b>	<b>Cost</b>	<b>Proportion of Dwellings</b>
Audit	\$200	100 per cent
Upgrade household CFLs	\$70	20 per cent
Weather Sealing retrofit	\$420	75 per cent
Ceiling insulation	\$1,530	40 per cent
Hot water – electric to solar	\$3,500	30 per cent
Hot water – electric to Heat pump	\$4,000	10 per cent
High energy efficiency showerhead	\$95	50 per cent
Paint roof white	\$750	20 per cent
Fridge upgrade	\$950	15 per cent
<b>Average Cost Per Dwelling</b>	<b>\$2800</b>	



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A report prepared by KPMG for the Brotherhood of St Lawrence suggests that low-income households may need up to \$6,000 for retrofit activities. The report *KPMG, the Brotherhood of St Lawrence & Ecos Corporation: A National Energy Efficiency Program to Assist Low-Income Households*,<sup>38</sup> recommends that the federal government implement a national energy efficiency program for 3.5 million low-income households over the next seven years. The proposed program would involve one home visit that would determine the most appropriate package of energy efficiency measures for each household. Each household would receive energy efficiency improvements up to the value of \$2,000 (including the cost of the visit). The energy efficiency improvements may include compact fluorescent light bulb (CFL) light bulbs, efficient shower roses, weather-proofing, curtains, ceiling insulation, and efficient refrigerators. This package excludes some measures such as solar hot water, solar photovoltaic systems, and upgrades to air-conditioning; however, the report notes that some households with special circumstances that need energy efficient water heating or air conditioning may receive a grant of up to \$6,000.



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### Residential Incentive Summary as at 08.10.09

ENERGY EFFICIENCY MEASURE <sup>#</sup>	FINANCIAL INCENTIVES
<b>Install solar photovoltaic power system</b>	
<i>Alice Solar City financial incentives for solar PV systems are currently fully committed. Depending on demand from householders, Alice Solar City may facilitate other solar PV packages for Alice Springs residents. To be kept informed, please register your interest with Alice Solar City</i>	
<b>Incentives on the following measures calculated at 35% of eligible costs (incl. GST) up to limits outlined below</b>	
<b>Install solar hot water system</b>	
• 302JOTP (Electric boost) one-shot relay	Up to \$2000
• 302JOTP (Gas Boost)	Up to \$2100
• 181JOTP (Electric Boost) one-shot relay	Up to \$1500
• 181JOTP (Gas Boost)	Up to \$1750
• 272DJV (Electric Boost)	Up to \$2000
• 272DJV (Gas Boost)	Up to \$2100
• Install Solahart Streamline 272SLVg gas in-line boost	Up to \$2100
Service of existing solar hot water system	Up to \$200
Paint roof white	Up to \$750
Replace old roofing with white sheeting	Up to \$2500 (materials only)
Install roof ventilation device	Up to \$300
Installation ceiling insulation – Batts – (minimum R3.0)	Up to \$750
Installation ceiling insulation – Loose fibre/ foam (minimum R3.0)	Up to \$1500
Replace existing insulation – batts	Up to \$1000
Replace existing insulation Loose fibre/ foam	Up to \$1500
Retrofit of insulation into walls	Up to \$1500
Low energy lighting replacements (CFL bulbs, LED bulbs, T5 fluorescent tubes)	Up to \$200 (minimum purchase of \$50 to claim incentive)
Replace standard 12 volt halogen downlight system for low-energy 240 volt fittings and bulbs	Up to \$350
Installation of motion sensors on existing outdoor lighting	Up to \$150
Window tinting	Up to \$700
Double glazing (Insulated Glazing Units)	Up to \$3500
Installation of "One Shot" Relay for existing SHW systems	Up to \$150
Replacement of perished fridge seals	Up to \$100
Service of evaporative A/C	Up to \$100
Install shading on walls/windows	Up to \$1000
Install thermal "skin" over external walls	Up to \$1000
Purchase opaque swimming pool cover	Up to \$350

<sup>#</sup>Minimum standards and conditions apply to each measure. New homes may access solar hot water, window tinting and double glazing incentives only. Alice Solar City Register Suppliers must be used to carry out all work (i.e. householders undertaking DIY work not permitted) with the exception of the Low energy lighting replacements and Purchase swimming pool cover incentives. For further information, please don't hesitate to visit the Alice Solar City Smart Living Centre at 82 Todd Street or phone (08) 8950 4350.



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<sup>1</sup> Climate Risk (2011) WWF Energy report Supplemental Briefing –Australia: What would a 100% global renewable energy plan mean for Australia

<http://www.wwf.org.au/news/australia-could-lead-with-worlds-cheapest-renewable-energy/>

<sup>2</sup> <http://www.garnautreview.org.au/chp7.htm>

<sup>3</sup> There are 170 countries that pollute less than Australia. All up there are 176 countries that like Australia contribute less than 2% of global emissions, accounting for approximately 35% of global emissions.

<sup>4</sup> A national pollution reduction target is Australia's contribution to global emission reduction which would include domestic emission reduction (reductions within Australia) and international emissions reductions (reductions Australia pays for from other countries).

<sup>5</sup> With the ability to increase the 2020 target if science deems necessary

<sup>6</sup> Garnaut 2008

<sup>7</sup> Jotzo, F (2011) Carbon pricing that Builds Consensus and reduces Australia's Emissions: Managing Uncertainties using a rising fixed price evolving to emissions trading. CCEP Working Paper 1104

<sup>8</sup> Jotzo, F (2011) Carbon pricing that Builds Consensus and reduces Australia's Emissions: Managing Uncertainties using a rising fixed price evolving to emissions trading. CCEP Working Paper 1104.

<sup>9</sup> Jotzo, F (2011) Carbon pricing that Builds Consensus and reduces Australia's Emissions: Managing Uncertainties using a rising fixed price evolving to emissions trading. CCEP Working Paper 1104.

<sup>10</sup> For more information see Wood, P.J and Jotzo, F. (2011) Price floors for emissions trading Energy Policy, doi:10.1016/j.enpol.2011.01.004

<sup>11</sup> New Zealand's commitment to include agriculture in its emissions trading scheme from 2015 is significant for Australian farmers, as New Zealand is Australia's main competitor in domestic and most international markets for meat, dairy products, wool and temperate horticultural products

<sup>12</sup> Garnaut Review (2011) Transforming Rural Land Use: Update Paper 4, <http://www.garnautreview.org.au/update-2011/update-papers/up4-transforming-rural-land-use.pdf>

<sup>13</sup> Garnaut Review (2011) Transforming Rural Land Use: Update Paper 4, Box 3, page 12, <http://www.garnautreview.org.au/update-2011/update-papers/up4-transforming-rural-land-use.pdf>

<sup>14</sup> [http://www.aph.gov.au/Senate/committee/ec\\_ctte/carbon\\_farming/submissions.htm](http://www.aph.gov.au/Senate/committee/ec_ctte/carbon_farming/submissions.htm) WWF-Australia Submission 44

<sup>15</sup> <http://www.climatechange.gov.au/~media/publications/carbon-farming-initiative/CFI-Preliminary-estimates-of-abatement.pdf>

<sup>16</sup> Garnaut Review (2011) Carbon Pricing and reducing Australia's Emissions: Update paper 6, <http://www.garnautreview.org.au/update-2011/update-papers/up6-carbon-pricing-and-reducing-australias-emissions.pdf>, pg 24

<sup>18</sup> Garnaut Review (2011) Carbon Pricing and reducing Australia's Emissions: Update paper 6, Page 24, <http://www.garnautreview.org.au/update-2011/update-papers/up6-carbon-pricing-and-reducing-australias-emissions.pdf>



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- <sup>19</sup> Garnaut Review (2011) Carbon Pricing and reducing Australia's Emissions: Update paper 6, <http://www.garnautreview.org.au/update-2011/update-papers/up6-carbon-pricing-and-reducing-australias-emissions.pdf>
- <sup>20</sup> Garnaut Review (2011) Transforming Rural Land Use: Update Paper 4, Box 5, page 19, <http://www.garnautreview.org.au/update-2011/update-papers/up4-transforming-rural-land-use.pdf>.
- <sup>21</sup> As recommended by Garnaut in Garnaut Review (2011) Carbon Pricing and reducing Australia's Emissions: Update paper 6, <http://www.garnautreview.org.au/update-2011/update-papers/up6-carbon-pricing-and-reducing-australias-emissions.pdf>
- <sup>22</sup> WWF supports FIT as the preferred mechanism to support renewable technologies as it provides investor certainty with a fixed price, and the price can be varied to suite the technology. Large Scale Feed-in-Tariffs have been successfully used in 22 countries and is considered the force behind Germany's renewable energy success.
- <sup>23</sup> <http://wwf.org.au/publications/carbon-constraints-2050-report/>
- <sup>24</sup> Australian Treasury (2008) Australia's Low Pollution Future: The Economics of Climate Change Mitigation
- <sup>25</sup> Daley, J., Edis, T. and Reichl, J. 2011, Learning the hard way: Australian policies to reduce carbon emissions, Grattan Institute, Melbourne. [http://www.grattan.edu.au/publications/077\\_report\\_energy\\_learning\\_the\\_hard\\_way.pdf](http://www.grattan.edu.au/publications/077_report_energy_learning_the_hard_way.pdf)
- <sup>26</sup> Victoria – the Green Jobs State: Seizing the Opportunities. Case Study 3: Energy & and Water Efficiency in residential Buildings, page 20, [http://www.environmentvictoria.org.au/sites/default/files/CASE\\_per\\_cent20STUDY\\_per\\_cent203.pdf](http://www.environmentvictoria.org.au/sites/default/files/CASE_per_cent20STUDY_per_cent203.pdf)
- <sup>27</sup> As at 30 June 2006 there were a projected 8.1 million households in Australia that were home to an estimated 20.2 million people. <http://www.abs.gov.au/ausstats/abs@.nsf/7d12b0f6763c78caca257061001cc588/6C0F2180158809B9CA2573D20011048E?opendocument>
- <sup>28</sup> KPMG and Brother Hood of St Laurence have proposed a national program to retrofit 3.5 million low-income homes over the next seven years. The program would cost \$11.2 billion and create or safeguard 6,900 to 15,300 jobs nationally.
- <sup>29</sup> Each Solar City project is made up of a consortium of government, not-for-profit, research, and private partners. The Townsville Solar City consortium is led by Ergon Energy, with members including the Townsville City Council, HIG Riverway (JV), Delfin Townsville and Cafalo Pty Ltd and the Queensland Government's Department of Mines and Energy. The Alice Springs consortium is led by the Alice Springs Town Council with members including the Northern Territory Government, Northern Territory Power and Water Corporation, Tangentyere Council, Northern Territory Chamber of Commerce and Industry, the Desert Knowledge Cooperative Research Centre and the Arid Lands Environment Centre.
- <sup>30</sup> Solarise: News form Australia's Solar Cities, page 2 <http://www.environment.gov.au/settlements/solarcities/publications/solarise/pubs/solarise-issue4.pdf>
- <sup>31</sup> KPMG, the Brotherhood of St Laurence & Ecos Corporation (2008). *A National Energy Efficiency Program to Assist Low-Income Households*. [http://www.bsl.org.au/pdfs/KPMG\\_national\\_energy\\_efficiency\\_program\\_low-income\\_households.pdf](http://www.bsl.org.au/pdfs/KPMG_national_energy_efficiency_program_low-income_households.pdf)
- <sup>32</sup> <http://www.warmfront.co.uk/index.htm>



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<sup>33</sup> Op cit

<sup>34</sup> The GGAS scheme in NSW delivered up to 5,000 household visits per week at its peak (pg 43 of KPMG, the Brotherhood of St Laurence & Ecos Corporation (2008) *A National Energy Efficiency Program to Assist Low-Income Households*.

[http://www.bsl.org.au/pdfs/KPMG\\_national\\_energy\\_efficiency\\_program\\_low-income\\_households.pdf](http://www.bsl.org.au/pdfs/KPMG_national_energy_efficiency_program_low-income_households.pdf)

<sup>35</sup> Low-income households are typically disproportionately affected by energy prices. Their housing and appliances are usually less energy efficient to begin with, they are unable to afford to replace appliances or implement new energy efficient measures, and their energy bills make up a higher portion of their household expenditure.

<sup>37</sup> Environment Victoria (2008) *Victoria - the Green Jobs State. Seizing the opportunities. Case Study 3: Energy and Water Efficiency in residential Buildings*, Table 2, page 24.

<http://www.environmentvictoria.org.au/library/victoria-green-jobs-state-seizing-opportunities>

<sup>38</sup> KPMG, the Brotherhood of St Laurence & Ecos Corporation (2008) *A National Energy Efficiency Program to Assist Low-Income Households*.

[http://www.bsl.org.au/pdfs/KPMG\\_national\\_energy\\_efficiency\\_program\\_low-income\\_households.pdf](http://www.bsl.org.au/pdfs/KPMG_national_energy_efficiency_program_low-income_households.pdf)