

KPMG, Brotherhood of St Laurence and Ecos Corporation

A national energy efficiency program to assist
low-income households



AUDIT ■ TAX ■ ADVISORY



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The services provided in connection with this engagement comprise an advisory engagement, which is not subject to assurance or other standards issued by the Australian Auditing and Assurance Standards Board and, consequently no opinions or conclusions intended to convey assurance have been expressed.

No warranty of completeness, accuracy or reliability is given in relation to the statements and representations made by, and the information and documentation provided by the Brotherhood of St Laurence management and personnel consulted as part of the process.

KPMG have indicated within this report the sources of the information provided. We have not sought to independently verify those sources unless otherwise noted within the report.

KPMG is under no obligation in any circumstance to update this report, in either oral or written form, for events occurring after the report has been issued in final form.

The findings in this report have been formed on the above basis.

Third party reliance

This report is solely for the purpose set out in the executive summary and for the Brotherhood of St Laurence's information, and is not to be used for any other purpose or distributed to any other party without KPMG's prior written consent.

This report has been prepared at the request of the Brotherhood of St Laurence in accordance with the terms of KPMG's engagement letter/contract dated 16th July 2008. Other than our responsibility to the Brotherhood of St Laurence, neither KPMG nor any member or employee of KPMG undertakes responsibility arising in any way from reliance placed by a third party on this report. Any reliance placed is that party's sole responsibility.

Forecasts

In the course of our work, projections have been prepared on the basis of assumptions and methodology which have been described in our report. It is possible that some of the assumptions underlying our projections may not materialise. Nevertheless, we have applied our professional judgement in making these assumptions, such that they constitute an understandable basis for estimates and projections. Beyond this, to the extent that certain assumptions do not materialise, then you will appreciate that our estimates and projections of achievable results will vary.

1 Executive summary

KPMG were engaged by the Brotherhood of St Laurence and in conjunction with Ecos Corporation conducted a study into the possible impacts of the Carbon Pollution Reduction Scheme (CPRS) on low-income households. This report outlines the range of options available to the Government for providing assistance. We welcome the Commonwealth Government's commitment to addressing the problem of climate change, its acknowledgement of the difficulties facing low-income households and its commitment to engage with the community through the *Green Paper*.

This report puts forward a roadmap for the Government to meet its commitment made in the *Green Paper* to assist low-income households. Our roadmap demonstrates the difficulties which will confront low-income households but more importantly provides a detailed plan of action to close the gap in the expected extra costs of energy bills resulting from the CPRS.

The program outlined in this paper ensures that money will be spent in a way that most effectively meets the aims of the Commonwealth Government's policy to provide assistance to low-income households.

A cornerstone of our implementation plan is an unprecedented program of targeted home visits, aimed at harnessing the full potential of energy efficiency measures. Home visits achieve this by matching energy efficiency measures to the characteristics of the house, as well as taking into account demographic, geographic and climatic issues.

This report recommends the Government implements a national energy efficiency program for 3.5 million low-income households over the next 7 years we recognise that the Government has committed to CPI indexation and cash assistance. However, cash assistance alone does not represent the best long-term solution for low-income households and government.

The program would involve a 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.

Some households with special circumstances that need energy efficient water heating or air-conditioning may receive a grant of up to \$6,000.

This report finds that the costs of energy will rise substantially even without the introduction of the CPRS.

An improvement in energy efficiency provides an opportunity for an effective demand side response by households that can shield households from the impact of rising energy costs through a reduction of energy consumption.

For these reasons, an upfront investment in energy efficiency measures targeted at low-income and vulnerable households can be considered a natural hedge against rising electricity prices and the drain on the budget from the ever-increasing cost of living expense.

The business case for a national energy efficiency program

We argue that a foundation stone for any comprehensive response to assisting Australian households to adjust to increasing energy prices arising from the introduction of the CPRS is the development and implementation of a national energy efficiency program.

This will need to be supported by cash assistance and CPI adjustment. We believe that a program of the type that we propose represents the best risk management strategy for both the Commonwealth Government and low-income households. While cash compensation is easy to administer we believe that if it is the only form of assistance to low-income households it will be a sub-optimal and risky approach. It will also fail the fundamental purpose of the CPRS which is to change the behaviour of industry and consumers by sending a clear price signal for carbon polluting activities and inefficient energy consumption.

Our business case is underpinned by four critical elements, namely:

- the costs and benefits of energy efficiency versus cash assistance;
- the long term value for money of an energy efficiency program;
- the intrinsic value of engaging households in the energy efficiency challenge; and
- the comparability of our proposed initiative with those undertaken by other jurisdictions, demonstrating that these programs can be rolled out at a national scale and the proposed funding for each household is consistent with initiatives undertaken elsewhere.

These elements are outlined in detail in the paper but are summarised as follows:

Costs and benefits of a national energy efficiency program vs. total reliance on cash assistance

Assuming a carbon price of \$20/t (of CO₂-e) that increases by approximately 5.45 percent per annum over the period 2010/11 – 2021/22, the cost of the CPRS on low-income households is approximately \$16.7 billion (in net present value terms). The cost of a national energy efficiency program (such as that described in this report) is approximately \$8.7 billion in NPV terms over the same period. Over the same period, the saving that would accrue from a national energy efficiency program is approximately \$14.0 billion¹, representing a total benefit to the community of \$5.3 billion.

¹ This assumes that the total savings that accrue to households are in the order of \$470 to \$700 in the first year of the CPRS, increasing proportionately with the price of carbon.

The following table sets out the total net benefits of the program. At \$20/t (of CO₂-e) the net benefit of the program is a saving of \$5.3 billion to the community, at \$40/t (of CO₂-e) the saving is \$6.3 billion and at \$60/t (of CO₂-e) the net saving to the community is approximately \$11.0 billion (see Section 10).

Table 1.1 The benefits that accrue from the national energy efficiency program

Assumptions regarding the cost of carbon	Costs/savings in NPV terms	Comment
\$20/t CO ₂ -e		Assumes carbon price starts at \$20/t and trend up to \$34/t by 2021/22 (i.e. 5.47% per annum)
Savings accruing to households from the energy efficiency program	+\$14.0bn	
Cost of energy efficiency program	-\$8.7bn	
Total benefit of the program	+\$5.3bn	

The primary benefits can be summarised as follows:

- CPI adjustment alone does not take account of the disproportionate amount of money low-income households spend on their energy consumption relative to the rest of the community;
- one off cash assistance will be eroded over time;
- cash compensation alone will dampen the price signal and limit the behavioural change necessary by the household sector;
- in net present value terms, the savings that accrue to the community from the rollout of a national energy efficiency program outweigh any associated cost; and
- the rollout of a national energy efficiency program will create demand for energy efficiency measures, and thus lead to the creation of new jobs and substantial direct and indirect economic benefits.

Value for money

The national energy efficiency program we propose represents considerable long-term value for money. Firstly, it represents an expenditure of auction funds which covers a significant number of households i.e. 3.5 million households or approximately 40 percent of all households, which

means the scheme will have broad coverage across the Australian community. Secondly, the savings which are delivered to households are savings in perpetuity. The alternative, as we demonstrate above, is ever increasing forms of cash assistance which do not engage households in the energy efficiency challenge and are generally poorly targeted. That is, there is no guarantee that households who are facing multiple demands on their household budgets will use the compensation to invest in measures to enhance energy efficiency and reduce their energy consumption. This expenditure will also have other wider benefits, which include reducing demand in peak and non-peak periods and improving the health and comfort of certain population groups by improving their capacity to heat and cool their properties.

Comparability with other schemes

In developing our proposal, the Brotherhood of St Laurence and KPMG looked at other similar schemes to apply the ‘common sense test’ to three key platforms of any energy efficiency program. Firstly, what were the proven individual elements of energy efficiency initiatives. Secondly, how had they been packaged in other jurisdictions to give the maximum effect of reducing household energy costs and the extent to which the costs of that packaging was comparable to what we propose. Thirdly, the extent to which programs of this nature can be rolled out on a national scale and in a timeframe that makes the greatest impact to reducing household energy bills.

Our report provides a detailed description of international and national schemes however there are a number of observations to make upfront. In respect of packages we are proposing an average package of \$2,000 per low-income household rising to an average of \$6,000 in exceptional circumstances. These packages are designed to close the gap (as far as possible), i.e. shield the household from the impact of the CPRS. The UK *Warm Front* program provides packages of between 2,700 pounds and 4,000 pounds for households with costs associated with converting to more efficient heating. We also tested savings of individual components against Victorian Energy Efficiency Target (VEET) Abatement Factors. Thirdly, we note that in the UK and in some jurisdictions in Australia e.g. Greenhouse Gas Abatement Scheme (GGAS) in NSW, there is considerable evidence that programs of this nature could be quickly scaled up to a significant level.

Targeting households most at risk and engaging them in the energy efficiency challenge

The final element of our business case for a national energy efficiency program comes from the intrinsic and often intangible value of engaging households in the type of energy efficiency projects best suited to their home and the actions they can take to reduce their overall consumption. We firmly believe that the reliance on cash assistance only will fail to bring the community into the challenge of living in a carbon-constrained world. We argue that the initiative we propose will both engage and empower households to take action themselves to reduce their energy consumption. That change in behaviour will be underpinned by direct assistance with energy efficient measures matched to a particular household’s needs through an unprecedented program of home visits.

In simple terms, low-income and vulnerable households will be given not just the money but the means to reduce their energy consumption and in turn, to reduce their energy costs in a sustainable way. We believe this is the fundamental social justice challenge in introducing the CPRS that is, to protect the most vulnerable people while encouraging the whole community to use energy more wisely.

Key recommendations of this study

This paper makes six key recommendations. We summarise the recommendations and associated benefits as follows:

- 1** Government should implement a national energy efficiency program involving a home visit for approximately 3.5 million low-income households over the next seven years at a total cost of approximately \$11.2 billion. This will:
 - facilitate an effective and targeted demand side response to rising energy costs (see Section 5);
 - reduce the Commonwealth Government's long-term reliance on cash compensation (whether through the tax and/or welfare system) to low-income households;
 - create approximately 40,000² jobs over seven years by boosting the supply and demand for energy efficiency products and measures (see Section 5);
 - provide benefits to middle-income households from the economies of scale and efficiencies created from the unprecedented rollout of energy efficiency measures vis-à-vis the reduced price of these products/services, making them more accessible to all Australians (see Section 7); and
 - After the 7 years of the program these measures will have locked in about 45 million tons of lifetime CO₂-e abatement. (see Section 6).

These figures are based on 100 percent take-up of the program. In the event that take-up is less than this, the program could be extended to other households.

- 2** Low-income households should be provided with packages of assistance with an average value of \$2,000 and an upper bound of \$6,000 (both of which will depend on location and the condition of their home and special circumstances). This will save low-income households:
 - between \$313-\$470³ per annum (for the standard package of \$2,000 depending on the package of energy efficiency measures required) in energy costs to help them

² The employment impact is driven by the investment required in the production, sale and delivery of the energy efficiency measures.

³ As we note in Section 6, the maximum savings achievable are in the range of \$410 to \$670.

- sustainably meet the increase in the cost of living flowing from the CPRS (see Section 6); and
- up to \$700⁴ per annum (for the upper bound package of \$6,000) in energy costs for those low-income households who have to cope with additional hardship - arising from geographic, climatic, medical conditions etc. (see Section 6).
- 3** Government should commit to spend approximately \$596 million the year before the scheme commences:
- through the delivery of *Green Vouchers* to all low-income households (approx \$70 million); and
 - establishing the national energy efficiency scheme including the collection of information, design of delivery mechanisms and preliminary contact with target households, home visits and some initial programs targeting 125,000 households in the first year to test the scoping of the cost of the packages, the targeting and the specifications of the tender process (approx. \$450 million).
- 4** Delivery should be achieved through harnessing private sector expertise and enterprise with the knowledge and experience of government and non-government agencies. This paper recommends that the private and community sectors be engaged via a tender process.
- The benefit of engaging with the private and community sectors will be through more effective delivery of the program by building on their experience and knowledge in delivering similar programs at scale.
- 5** Various energy efficiency schemes should begin coordination.
- This will ensure that any duplication between the State-based schemes and any Commonwealth program is minimised.
- 6** Government commit at least 50 percent of auction revenues to low and middle-income households, following a similar call by Ross Garnaut that half of permit revenues be set aside to assist households.
- Having set aside the required funds to support the implementation of a national energy efficiency program, the mix of further assistance (required to fully compensate low to middle-income households) may be a combination of:
 - adjustments to benefits in line with the CPI;
 - additional cash compensation; and
 - various forms of assistance to middle-income households.

⁴ As we note in Section 6, the maximum saving achievable is up to \$1,000.

Our recommended implementation plan

Our implementation plan has four elements:

- ***Early action***: the program commences in 2009/10, a year prior to the introduction of the CPRS. This is necessary because:
 - low-income households need to be protected as far as possible before energy prices begin to rise; and
 - a plan of this scale will take time to implement, therefore we need to get started now to ensure that we engage with and assist low-income households.
- ***Simplicity***: participation is based on clear, yet simple, eligibility criteria designed to reach households at risk. Examples include holders of age pension cards, disability allowances and Commonwealth health cards.
- ***Choice and flexibility***: households will have the flexibility to choose the energy efficiency measures which are best suited to their particular house.
- ***Leveraging 'know-how'***: the program will engage with the private and community sectors to deliver the program because:
 - the private sector has the experience from delivering similar programs and, as a result, is best suited to assist in the delivery of a program of this scale; and
 - the community sector understands the needs and challenges faced by low-income and vulnerable households.

Vote of thanks

We would like to thank the Hon. John Thwaites for chairing the Steering Committee of the project.

The study benefited from key insights provided by our reference group which included representatives from: Environment Victoria, Moreland Energy Foundation Ltd., ACOSS, ANZ, ACF, ACTU, VCOSS, Society of St Vincent De Paul, Alan Pears, the Climate Institute and agencies of the Victorian and NSW Governments. While this paper does not necessarily represent their views, we thank all those involved.

2 The study

The rationale for this study

The *Green Paper* finds that the CPRS is expected to increase the costs of energy (which includes electricity and gas) as well as general goods and services. The fundamental proposition of this report is that low-income households will be adversely impacted in a disproportionate way and that energy efficiency is the most effective way to address this.

This is because low-income households:

- incur the greatest energy costs when expressed as a proportion of weekly expenditure⁵;
- have very little capacity to raise the significant capital required to purchase appliances that will change their energy consumption;
- will more likely to be living in sub-standard housing which is poor in respect of energy efficiency; and
- cannot pass the price impact to any other sector in the economy as they represent the end of the supply chain.

The Commonwealth Government has acknowledged that low-income households are particularly exposed to the higher costs of living to flow from the CPRS.

There is no doubt that the plan of action outlined in this report is ambitious. A household energy efficiency scheme of this magnitude has not been envisaged for Australia. Furthermore, some doubt the effectiveness of energy efficiency measures as a cushion against the impacts of rising energy costs.

Nevertheless, there are precedents both from Australia and internationally that suggest this scheme is achievable. For example, the GGAS scheme in NSW at its peak was delivering in-house installations of energy efficient light bulbs to 5,000 houses a week. In the United Kingdom, over the past 6 years five million homes have been insulated under government programs.

KPMG and the Brotherhood of St Laurence support the need for urgent action to address the impacts of climate change. We also recognise that the Commonwealth Government's chosen reaction (i.e. to introduce a CPRS), is a responsible public policy response to a critical global problem. We believe that there is both a moral and economic imperative, as well as a positive environmental outcome, from assisting low-income households in a permanent and sustained way. These imperatives can be summarised as follows:

⁵ CSIRO (2008) 'Energy Affordability, Living Standards and Emissions Trading: Assessing the social impacts of achieving deep cuts in Australian greenhouse emissions', *Report to The Climate Institute, & The National Institute of Economic and Industry Research (NIEIR)* titled: *The Impact of carbon prices on Victorian and Australian Households* (2008).

- the moral imperative arises from the ‘social justice case’ to ensure that the most disadvantaged in the community are not adversely impacted by the transformation of the economy that will inevitably occur from the introduction of a CPRS; and
- the economic imperative arises from the need to ensure that any CPRS is robust and that proactive and well-considered interventions to assist low-income households are consistent with the overall intent of the CPRS and the widespread acceptance of the need to align our social and economic development and growth within a carbon-constrained economy.

It is critical to state that the principle focus of, and motivation for, this study is economic assistance, not welfare measures. That is, we believe there are serious positive economic benefits which will flow from ensuring that the CPRS has broad coverage and that there are minimal carve-outs and exemptions, which have the potential to compromise the overall efficiency of the CPRS.

The aims and objectives of this study

The main objective of this analysis is to provide a detailed, costed and modelled set of options for the Government to provide assistance to low-income households under the CPRS which:

1. ensure equitable outcomes across households from the introduction of a CPRS to ensure the most disadvantaged from the community are not adversely impacted;
2. mitigate against expected rising energy costs for target households by improving energy efficiency of homes;
3. removes the risk for low-income households that assistance in the form of cash will be removed in future years;
4. delivers energy efficiency to low-income households at least-cost;
5. contributes to a reduction of carbon dioxide equivalent emissions (CO₂-e) by improving energy efficiency of homes;
6. are introduced at a scale which makes a difference;
7. provide a positive contribution to the Australian economy by generating jobs, stimulating private sector investment and expanding the market for affordable energy-efficient technology; and
8. are practical and achievable, and can be delivered with minimum red tape.

The approach adopted in this study

Our approach consisted of the following key elements:

- identification of low-income households most at risk;
- quantification of the impact of the CPRS on these households;
- examination of the case for how energy efficiency measures could provide assistance;
- modelled the impact of energy efficiency measuring in terms of closing the gap, i.e. the marginal impact of the CPRS on the cost of living;
- development of an implementation plan to rollout a minimum value of energy efficiency measures to target households (as soon as practicable); and
- conducted stakeholder consultation with energy supply providers, academics, non-government organisations and government departments (both State and Federal).

Structure of this overview

The analysis is structured into a number of sections:

Section 3: The impact of the CPRS on low-income households

Section 4: Which low-income households are most at risk

Section 5: Why energy efficiency is most effective in assisting low-income households

Section 6: The elements of a national energy efficiency program

Section 7: Implementation and targeting

Section 8: Delivery – engaging with the private and community sector

Section 9: Tenure

Section 10: Summary of budgetary implication for government

Section 11: Recommendations

This overview represents a brief synopsis of a more comprehensive report comprising detailed technical appendices outlining the methodology and structure of the economic and financial modelling used to calculate the impact of the CPRS on low-income households. To this extent we also thank Professor I.A. Moosa of Monash University for his direction and independent verification of the economic analysis undertaken as part of this report.

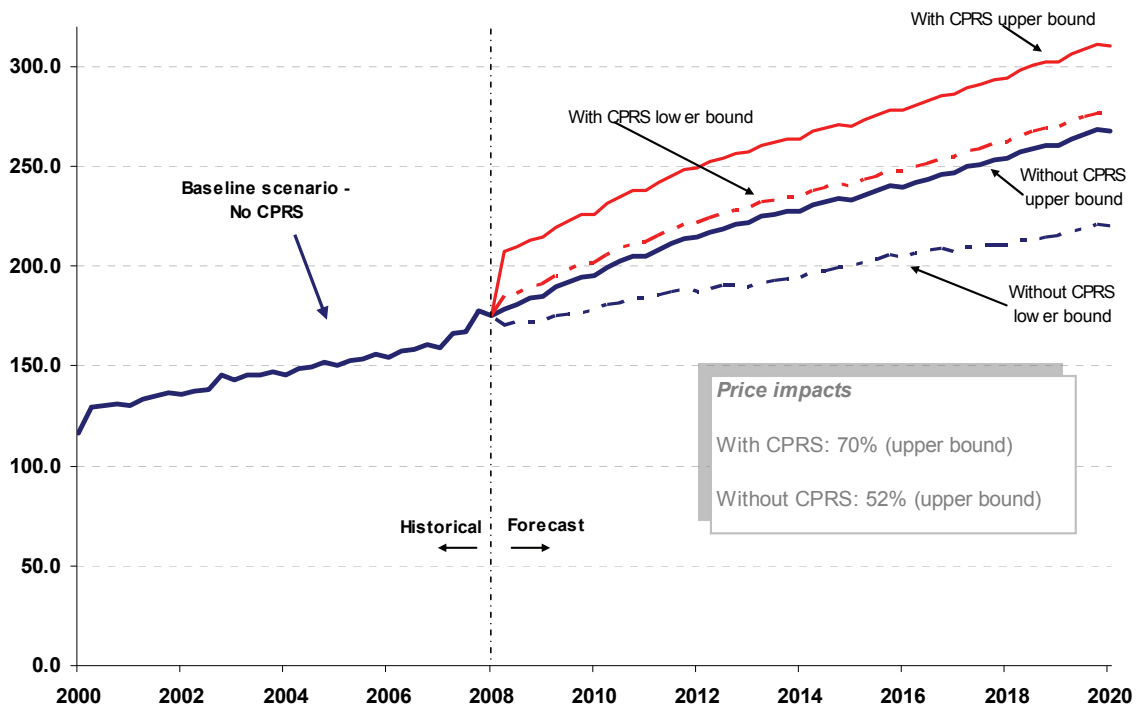
3 The impact of the CPRS on low-income households

The CPRS is designed to have an impact on the price of all carbon intensive energy sources. Households have been exposed to strong growth in electricity prices. Over the last 5 years baseline electricity prices have increased significantly in all Australian cities. This is due to a number of factors including rising electricity transmission and distribution network costs.

Even without the impact of the CPRS, strong growth in baseline retail electricity prices is expected to continue in the foreseeable future. Baseline retail electricity prices are forecast to increase in nominal terms (i.e. not excluding inflation) by 25 percent (lower bound) to 52 percent (upper bound) without the CPRS and by around 30 to 70 percent with the CPRS, over the total period i.e. 2008/20⁶.

While the forecasts presented in this analysis may seem to represent a significant increase in electricity prices, it is important to note that since 2000 retail electricity prices have increased approximately 50.6 percent⁷ on average across Australia.

Figure 1.1 Historical and forecast retail electricity prices



⁶ Our detailed report sets out the technical framework used to generate the forecasts. In short, an econometric structural time series model comprising stochastic trend, cycle and trigonometric seasonal components was developed to forecast historic movements in electricity prices into the future. Details of the theory underpinning the methodology can be found in Harvey (1989): *Forecasting, Structural Time Series Models and the Kalman Filter*. The structure and results of our model were independently verified by Professor I.A. Moosa from Monash University (Melbourne).

⁷ The analysis is based on data and information publicly available and published by ABS, Consumer Price Index, Catalogue Number: 6401.0.

As illustrated by Figure 1.1, the CPRS will have substantial implications for household budgets, a point acknowledged in the *Green Paper*. According to a recent CSIRO report:

Attention to household type and income level is important because the share of income spent on energy products varies significantly with type and income level, ranging from around 15 percent in low-income households to around 5 percent in the high-income households...⁸

The CSIRO goes on to say that:

The importance of energy, and the nexus between energy and poverty, is also illustrated by the role of energy costs as a key indicator of financial stress. Energy costs feature in two of the nine financial stress indicators identified by ABS research, including 'could not pay electricity, gas or telephone bills on time', and 'could not afford to heat home' (ABS 2006 section 1.13). Other indicators included 'went without meals' and 'could not pay car registration or insurance on time'⁹.

Modelling the impact of the CPRS on low-income households is a difficult and challenging task. Isolating and quantifying the impact of a carbon price on electricity retail tariffs is complicated, for several reasons:

- it is not clear how the carbon price will impact on the bid-behaviour of electricity generators and as such impact on the pool (spot) price of electricity;
- it is also not clear what the ensuing impact on the futures prices will be and how this will impact the bilateral medium and long-term contractual negotiations between retailers and electricity generators,
 - we know that activity in the electricity futures market has decreased significantly, producing a stand off in the contracts market, as retailers and generators alike await the release of the design features of the CPRS which will allow market participants to form judgements as to the size, shape and nature of any price impact¹⁰.

Notwithstanding these challenges, to facilitate our analysis we began by collating data on household energy expenditure as a share of income¹¹. This established an initial reference point for calculating changes in energy affordability. We then calculated the expenditure required to

⁸ Energy Affordability, Living Standards and Emissions Trading: *Assessing the social impacts of achieving deep cuts in Australian greenhouse emissions*, 2007, p. 13.

⁹ Ibid. p. 13.

¹⁰ Our detailed report analyses recent activity in the electricity spot and futures markets, and shows that volatility in the wholesale electricity market has increased substantially. Furthermore, the analysis shows that price spikes are likely to become more frequent pursuant to the introduction of a CPRS impacting on the final electricity price paid by consumers.

¹¹ The data was sourced from the Australian Bureau of Statistics (ABS), in particular: Catalogue 6535.0.55.001 *Household Expenditure Survey, Australia: Detailed Expenditure Items, 2003-04 (Reissue)* and Catalogue 6537.0 *Government Benefits, Taxes & Household Income, Australia, 2003-04*. Note, the comprehensive data sets underpinning these catalogues were purchased from the ABS and as such may not be found (free of charge) on the internet. Any queries regarding the availability of the data should be directed to the ABS.

purchase a bundle of energy (comprising electricity, gas and other fuels) as a share of income over time by first applying the change in price in each year for each energy product to estimate the total price of the reference energy bundle, and secondly calculating this as a share of income in the year following the introduction of the CPRS.

Table 1.2 below details our estimates of the impact of the CPRS on low-income and vulnerable households. The results are presented in terms of the annual increase in expenditure (driven primarily by the increase in energy prices, directly through household bills, and indirectly through the increased cost of all other goods and services).

Table 1.2 Impact of the CPRS on low-income households without compensatory measures

Income group (see below for explanation)	Increase in expenditure due to the CPRS p.a.			
	\$20/t CO ₂ -e	\$30/t CO ₂ -e	\$40/t CO ₂ -e	\$60/t CO ₂ -e
Very low-income ¹² / high energy consumption	\$494.00 ¹³	\$624.00	\$764.40	\$910.00
Very low-income/ medium energy consumption	\$390.00	\$564.20	\$657.80	\$780.00
Low-income ¹⁴ / high energy consumption	\$478.40	\$592.80	\$715.00	\$865.00

The estimates above represent the total impact on household budgets¹⁵ (i.e. the summation of the increase in household energy bills and the increase in the price of all other goods and services consumed). These estimates provide an anchor point for the ensuing analysis¹⁶.

¹² Very low-income households are defined for the purposes of this report as those receiving gross income of less than \$500 per week.

¹³ This impact can be considered to be somewhat conservative compared to other studies such as that published by the National Institute of Economic and Industry Research (NIEIR) titled: *The Impact of carbon prices on Victorian and Australian Households* (2008), which finds that the impact on “Poor family households” is \$557.70 per annum. This study assumes a carbon price of \$25/t of CO₂-e.

¹⁴ Low income households are defined for the purposes of this report as those receiving gross income of between \$500 and \$1,000 per week.

¹⁵ Includes a component for petrol through the CPI. In the first 3 years of the scheme the government has committed to an offsetting decrease in excise to compensate for the increase in petrol prices. However, there is no commitment to continue this offset beyond this period.

¹⁶ The fact that very low-income households will be relatively more effected may appear on face value to be counter intuitive. However, since those in the very low income group dedicate a greater proportion of their weekly expenditure to energy related expenses, it follows that the impact will be felt relatively more heavily by this group.

In particular, they:

- provide the basis for analysing the total impact of the CPRS on different household typologies¹⁷ in particular low-income and vulnerable households; and
- provide the basis for analysing the total quantum of cash compensation that may be required after taking into account the positive impact of energy efficiency measures.

In this report we have not sought to argue what the cash assistance should be or what the right mix of energy efficiency and cash should be. Rather we have attempted to describe what an efficient mix of energy efficiency measures would comprise of and what the cost would be. We argue that the Commonwealth Government should devote an appropriate budget (see Section 10) to energy efficiency measures to ensure that low-income households are not exposed to the potential inflationary effects of the carbon price.

Our analysis shows that energy efficiency measures represent a predictable way of sustaining assistance to low-income households by reducing their energy bills, creating jobs and reducing CO₂-e emissions. The right mix of energy efficiency and direct cash compensation is ultimately a policy choice for the Commonwealth Government.

To facilitate our analysis, we constructed four stylised household types based on income and relative energy consumption. Each is outlined in Table 1.3 below:

Table 1.3 Stylised household types

Income type	Energy consumption profile
Very low-income ¹⁸	High energy use
Very low-income	Medium energy use
Low-income ¹⁹	High energy use

Having established the priority household types (albeit stylised), our challenge in modelling the impact of the CPRS on our stylised household groups was to make use of publicly available data to establish several thresholds, including:

1. a reasonable measure of ‘very-low income’; and
2. a robust indication of household ‘energy consumption’.

¹⁷ As part of our analysis, we estimated the impact on 22 different household typologies as defined by the ABS at two different income bands: those earning less than \$500 per week, and those households earning less than \$1,040 per week. Our detailed report describes the impact on all 22 different household typologies.

¹⁸ There are approximately 1.4 million very-low income households receiving less than \$500 (gross) per week according to the ABS Household Expenditure Survey, 2003/04.

¹⁹ There are approximately 1.7 million low-income households receiving between \$500 and \$1,000 (gross) per week according to the ABS Household Expenditure Survey, 2003/04.

Each is discussed in turn below.

Defining very-low income

Using ABS household expenditure survey data, our threshold for very-low income is any household receiving a gross income of less than \$500 per week, in 2005/06 dollars. This income threshold represents the bottom band in the ABS household expenditure survey. Our threshold for low-income is the next band i.e. \$500 to \$1,000 per week.

Establishing thresholds of energy consumption

As a proxy for relative energy consumption, we assumed that the amount spent on energy by different types of households to be a reasonable indicator of relative energy consumption. The data relating to energy expenditure was sourced from the ABS. According to the ABS information relating to the average household, families with dependent children spend approximately one-third more than households without children. When compared to households with only one occupant (lone person household), dependent children households spend twice as much on domestic fuel and power. While the ABS average household consumption data is not broken down by income band, it still provides a reasonable indication of the relative energy consumption profile across different household types.

In light of our comments above, the extent to which we were able to precisely model the monetary impacts from the CPRS on our stylised households was limited. It follows that the following estimated impacts provide an indication of the general direction rather than the precise magnitude, and should be interpreted in this light.

In summary, we believe the compensation should be offered by the Commonwealth Government to identified high energy users (from energy utilities data). These households can be contacted and an offer to assist can then be made based on the income criteria e.g. a pensioner who owns their house may have different needs to a single parent family in a rented home.

4 Which low-income households are most at risk

The Brotherhood of St Laurence has worked with low-income households for over seventy years. In their experience, these households spend proportionately more of their disposable income on energy consumption. This is a finding acknowledged in at least two recent reports²⁰.

Any increase in the cost of energy can significantly erode the discretionary income available to low-income and vulnerable households. Given that the objective of the CPRS is to cut emissions by increasing the price of carbon-intensive fuel, low-income and vulnerable households will be the hardest hit. Even within this group of households, some will be affected more than others. For example, households:

- consuming relatively high levels of energy despite earning very low-incomes;
- located in geographic areas not served by natural gas;
- located in remote and indigenous communities that have either very poor infrastructure or limited choice of energy source;
- with old or inefficient appliances that consume energy inefficiently;
- living in sub-standard houses;
- with health and disability issues; and
- that consist of very large families.

The above household types have been developed from a long history of working with disadvantaged and low-income household types. The following breakout box highlights some recent experience of the Brotherhood of St Laurence in understanding the needs and challenges faced by these households.

²⁰ See *Garnaut Climate Change Review Draft Report* (2008) and The National Institute of Economic and Industry Research (NIEIR): *The Impact of carbon prices on Victorian and Australian Households* (2008).

Brotherhood of St Laurence – equity in response to climate change program

Established during the Great Depression, the Brotherhood of St Laurence was the vision and creation of Father Gerard Tucker, a man who combined his Christian faith with a fierce determination to end social injustice. The Brotherhood has developed into an independent organisation with strong Anglican and community links. The organisation works actively for an Australia free of poverty.

The Brotherhood's approach to climate change links four important themes: reducing greenhouse gases; seizing the opportunities climate change presents; protecting low-income households from the impacts of climate change and enabling their participation in solutions.

Reducing greenhouse gas emissions is essential to protect all Australians, particularly those in low-income and disadvantaged households who are exposed to increased stress resulting from impacts of climate change. However, in reducing emissions, vulnerable households must not be further disadvantaged by measures such as a CPRS. It is also essential to seize the opportunities climate change presents and ensure disadvantaged households are able to benefit from the transition to a low carbon economy. Enabling low-income households to have access to effective energy efficiency measures has been a central aspect of the Brotherhood's climate change proposals.

The National Institute for Economic and Industry Research (NIEIR) study, *The impact of carbon prices on Victorian and Australian households* (May 2007), commissioned by the Brotherhood, was influential in highlighting the disproportionate impact an emissions trading scheme (ETS) would have on low-income and disadvantaged households. Subsequent research, including carbon use in poor Victorian households by local government area by Bill Unkles and Janet Stanley, and carbon prices and households in poverty by Bill Unkles, built on the NIEIR research. The former report highlighted how people in outer suburban and rural areas will be most disadvantaged by a carbon price. The latter report sounded a warning as to the number of households that could be pushed below the poverty line by the effects of carbon pricing if no compensation is offered.

Over the past 18 months, the Brotherhood, working with our partners, held three roundtables that addressed key issues related to equity and climate change. *Low-Income Households in the Private Rental Market*, which was chaired by John Thwaites the former Deputy Premier of Victorian, brought together experts from the areas of housing, community, energy efficiency and government to address the significant barriers to energy efficiency faced by private rental tenants. For disadvantaged households these barriers are magnified by low-incomes and their often poor quality housing. A second roundtable, *Insulating Low-Income Households from Energy and Other Price Rises Associated with the Emissions Trading Scheme*, held in April, sought to identify methods to assist low-income households cope with the costs of implementing an ETS.

The Brotherhood is also involved in practical actions to address climate change and reduce disadvantage.

Moreland Solar Village: The Brotherhood is a partner in the \$11 million Moreland Solar Village project led by the Moreland Energy Foundation (MEFL). A key part of the Brotherhoods' work will be to audit and retrofit 1,000 low-income and disadvantaged households.

Phoenix Fridges is an innovative approach to tackling the inefficiency of household fridges; the program takes fridges donated from all across Melbourne and recycles, repairs, and retrofits them to make them more energy efficient. The project also achieves great outcomes for the community by providing training and employment for people who are unemployed.

Energy and Water Taskforce (EWTF): The Brotherhood is working with Sustainability Victoria to provide energy savings to low-income households as part of EWTF. Energy efficiency measures undertaken include sealing cracks and gaps, installing blinds and roofing insulation. A key aspect of the program is to provide skills and training for long term unemployed people. In 2007 the Brotherhood audited and retrofitted 360 houses in Hastings and the Maidstone/Braybrook Neighbourhood Renewal sites. In 2008 the Brotherhood will audit and retrofit 300 houses on the Mornington Peninsula and a further 250 houses in Werribee.

This study recognises that there are groups in the community that face even greater risk, including people living in remote locations, indigenous communities, people living in private rental housing where a different approach may be needed to provide energy efficiency in their homes. These groups will require expert intervention to ensure that they get the most out of the energy efficiency measures. It is inefficient to expect people living in extreme and harsh conditions to have the ability to source the energy efficiency products and install them.

Furthermore, people living in public housing, and people with disabilities who face the extra cost of adapting their homes are also at risk. In all these cases we recognise that the implementation challenge will be different and unique however, the fundamental elements and packages which we outline in this report should be able to be adapted to meeting the needs of these groups.

5 Why energy efficiency is most effective in assisting low-income households

Some suggest that the ultimate energy efficiency ‘measure’ facing households is the price of energy itself. However, over-reliance on price signals risks ignoring the very real equity implications from such a policy. Many low-income and vulnerable households cannot respond to price signals in the manner envisaged – namely, switching to energy efficient appliances and behaviours – since the relatively large, upfront capital investment that is often required is out of reach. Most importantly, this is a fail safe way of ensuring disadvantaged and often vulnerable households will be assisted in a sustainable way in meeting the expected cost.

Furthermore, energy efficiency measures have additional benefits as they:

- are the most sustained way of assisting households to meet rising costs of energy because they help households to reduce *consumption* of energy, which is the ‘root cause’ of the need for assistance;
- have flow on effects in respect of job creation (we estimate 40,000²¹ jobs will be created) as well as reducing the cost of energy efficient products for all Australians; and
- present households with the opportunity to contribute to the task of reducing emissions of CO₂-e.

A large-scale government supported energy efficiency program would also address a series of market failures and/or barriers identified in previous studies such as the proposed Victorian Energy Efficiency Target (VEET)²² regulatory impact statement. The provision of direct energy efficiency support alleviates issues such as, discount rates and price inelasticity of demand. The energy assessment process will reduce the transaction/search costs for individuals and ultimately the community. There will be a need for the dissemination of effective information. Split incentives between landlord and tenant require particular action (see page 45).

Most of all, energy efficiency measures have a real chance of closing the gap. The following table provides summary information on a ‘menu’ of energy efficiency measures which have been shown to deliver real savings and have a proven track record of householder acceptance. The table outlines the following key information:

- the cost to retrofit i.e. delivery and installation of the measure;

²¹ This figure was obtained by estimating the impact of the investment required to rollout the energy efficiency program (approx. \$10.7 billion) on the Australian economy. The KPMG STS (Structural Time Series) Model of Australia was employed to derive the estimates. Our detailed report outlines the model framework and in particular how the \$10.7 billion investment was used to *shock* the model to derive the estimate. Note, the KPMG STS Model of Australia was built in conjunction with Professor I.A. Moosa from Monash University (Melbourne) and peer reviewed by Professor Andrew Harvey (Cambridge University) and Professor Siem Jan Koopman (Free University – Amsterdam).

²² Department of Primary Industries, Earth and Energy Resources Policy Division, *Proposed Victorian Energy Efficiency Target (VEET)*, September 2008.

- the proportion of those households that may be suitable to receive the measure; and
- the savings in energy consumption and energy expenditure.

Table 1.4 Energy efficiency measures

Retrofit activity	Average cost/household (incl. installation)	Proportion of dwellings that are suitable	Savings to energy bills weekly	Savings to energy bills yearly (at \$20/t CO₂-e)**	Skill needs
Upgrade household with CFLs	\$70*	65 – 80%	\$2.02	\$105	Unskilled
Weather sealing retrofit	\$420	~75%	\$2.16	\$112	Semi skilled
High efficiency showerhead	\$95	~75%	\$0.79	\$41	Plumber
Ceiling insulation	\$1,530	40%	\$4.05	\$210	Semi skilled
Hot water - old electric to solar	\$3,500	40%	\$8.84	\$460	Plumber and electrician
Hot water - old electric to heat pump	\$4,000	15%	\$5.62	\$293	Plumber and electrician
Fridge upgrade	\$950	17%	\$1.06	\$55	Unskilled

* Assuming 12 bulbs are replaced (per household) at an installed cost of \$6 per bulb.

** The yearly energy savings have been discounted by 30 percent.

Note: This a sample of the possible measures that could be offered.

Note, the figures in Table 1.4 have been discounted to allow for uncertainties. To put the assumed achievable savings from the energy efficiency measures (outlined in this report) in context, the reader is referred to the study published by Sustainability Victoria titled: *Energy Task Force – Bill Data Analysis and Reporting (2006)*, which for a suite of energy efficiency measures finds a lower reduction in total energy costs than those assumed in this report²³ which is largely based on VEET Abatement Factors. Given that some of the energy efficiency

²³ It is important to note that the retrofits outlined in the Sustainability Victoria report are different to those outlined here. Furthermore, the report is based on a small sample of households, and only calculates savings for 6 months of the year (Spring and Summer) as it finds inconclusive evidence of savings for the remaining months.

measures may not deliver the maximum expected savings, and that some measures may translate into increased levels of comfort rather than direct energy savings, we have assumed that 70 percent of the expected maximum savings will be achieved.

We have deliberately chosen a range of measures that comprise some of the fundamental goods and services that people need to live. This menu is recognised by other programs such as VEET etc. as providing realistic and practical energy efficiency measures. A short description of each measure is provided below.

Lighting upgrade

Up to 80 percent of homes still have incandescent globes. These will be banned from sale by late 2010 but will still be operating in most houses into 2012. An opportunity to accelerate their removal exists. Most houses will save \$150 for each year the replacement globes are installed and the installed cost will usually be much less. Next step technology will be upgrading the many inefficient down lights (mainly low voltage but high-energy use halogens) as the replacement technology is continually getting cheaper.

Showerhead upgrade

Water authorities estimate that 80 percent of Australian homes still have wasteful showerheads. A replacement program will provide annual savings in both energy and water costs. The average annual savings are \$50. Some regulatory barriers exist that limit this activity to licensed plumbers or DIY (do-it-yourself). A plumbers sub licence or agents' licence may make this work better. It is important to note that voluntary out of home changeover programs have historically had poor uptake²⁴.

Weather sealing

Weather sealing (e.g. door strips, vent seals, pelmets and curtains) provides significant savings in heating costs particularly in older homes for low cost. Savings are subject to significant variability but installations are generally low cost and can be done without prior knowledge of the house and its fittings. Installation by a tradesperson is generally not required.

Ceiling insulation

The Insulation Council of Australia & NZ estimates that 40 percent of Australian homes remain uninsulated. Installing ceiling insulation provides excellent payback in heating and cooling costs. These are likely to be older houses particularly in southern and inland Australia. Transport and installation makes this a more specialised offering and is unlikely to be done as DIY by households. Supply of materials is readily available.

²⁴ South East Water's 2007 Annual Report reports that their showerhead program exchanged 26,996 showerheads since 2003 from a customer base of 616,000 properties (1.5 percent/year). Barwon Water reported in 2007 that they have provided only 257 showerhead rebates in the same period from a customer base 127,000 properties.

Fridge

Refrigeration can be at least 15 percent²⁵ of household energy expenditure. Department of Environment, Water, Heritage and the Arts DEWHA (2008) reports that since the early 1990s the average energy consumption of new refrigerators and freezers has improved significantly, with a 40 percent reduction from 1993 to 2006. Other fridge upgrade programs such as the *Moreland Energy Foundation's Phoenix Fridge Program* have also noted significant inefficiencies in the performance of older fridges. Replacing old inefficient fridges also give renters some benefit that stays with them rather than their landlord. The upfront replacement cost of a fridge means many low-income households are unable to replace a poorly performing appliance. Incentives that cover the full replacement costs may be required to make this an effective measure for low-income earners.

Solar hot water/heat pump

Less than 5 percent of existing Australian homes have solar collectors. This will mostly be solar hot water with either electric or gas boost. Where solar is not feasible then heat pump technology could be applied as the performance improves. Capital cost of heat pump systems is currently high but declining. Heat pumps may be an effective retrofit in Class 2 dwellings (i.e. apartments, units etc.) where solar or gas are problematic. Solar installation capacity needs to be developed for large-scale rollout but this is possible within the required timeframes. Large-scale manufacture of solar hot water collectors provides large potential for reducing production costs. Average household savings are in the range of \$400 to \$700 per year. Savings in northern areas will generally be better than Southern Australia.

Other items

Where the level of savings cannot be provided by the aforementioned items then a more thorough assessment is needed and some customised approach may be implemented. This could include heating and cooling upgrades or appliance changeovers. The installed costs will be higher but it is expected that this would be required in a smaller number of homes. In-home identification of old and/or poorly performing appliances (fridges, washers, dryers) would provide excellent targeted savings. Renters would also benefit from the ability to take the appliances when they move.

Home visit

The home visit will ensure that the right measures are sourced and installed at the most efficient cost given the physical condition of the household. It will help households with behaviour change and enable the household to maximise benefits from more efficient appliances. The home visit will also connect the household to any relevant State or Commonwealth Government programs e.g. green loans, energy hardship funds. We estimate that the home visit will cost approximately \$300 per visit and up to \$500²⁶ for households in remote areas.

²⁵ 14% of the CO2 emissions from the average Australian home are from fridges and freezers (Sourced from DEWHA).

²⁶ This is based on the experience of energy service providers under the New South Wales GGAS scheme.

Energy efficiency information sources and uncertainties

Limited information exists about the costs and performance of large-scale energy efficiency retrofits in the Australian context. The relative merit of each energy efficiency measure proposed in this report is subject to many variables and there are uncertainties with each variable. There is some limited experience in Australia of large-scale energy efficiency campaigns, mainly GGAS in NSW. Otherwise industry estimates and modelling remain the best sources of large-scale program estimates for this report.

Product cost information is reasonably reliable however the price effects from going to large scale will vary. Some items will become cheaper through economies of scale in manufacture and aggregated purchasing however some products may become scarcer and be subject to price rises, at least in the short term, until manufacturing and/or import capacity increases.

The costs of in-home installation services are less certain. The installation costs have been estimated based on the time, variability and level of skill required for installing a particular item using GGAS data as well as industry quotes and estimates.

The performance of any energy efficiency retrofit item has also been estimated. Ideally the suggested measures should perform well without requiring substantial expertise in households.

Rebound effects

Whilst it is likely that most of the energy savings will be returned to households in lower bills (or lower increase in bills), some households will elect to use a similar amount of energy but now live in greater comfort. This is known as a 'rebound effect'. Increasing thermal comfort of low-income earners should be seen as an additional benefit of energy efficiency rather than as a diversion from the original objectives.

A 'rebound effect' is apparent in the performance of many energy efficiency items particularly those that enhance the thermal performance of a house. Consequently, the relative performance of measures that may be subject to rebound effects has been noted and unless the measure generated excellent potential savings it was given a lower priority than more reliable (non-thermal) measures such as lighting or appliance upgrades. The thermal measure that seems likely to be most effective will be ceiling insulation.

There may also be positive rebound effects were the installation of energy efficient items increases householder awareness and results in smarter, more informed, energy use decisions.

In our final assessment of the savings of energy efficiency packages, we have discounted maximum savings by 30 percent to take account of the rebound effect and difficulty in achieving maximum savings.

Performance data

Performance data for each measure was estimated from a number of sources. There are many variables in these estimates when estimating savings from a business as usual case. The figures presented in this report are largely based on the published Abatement Factors of VEET. The

adaptation of these factors may be an overestimate of savings for low-income households as VEET factors was modelled for average households which are likely to be larger (and have more fittings and appliances) than low-income households. Where possible these factors have been identified and discounts have been applied but uncertainty still remains.

Apart from VEET, main sources include data from the NSW GGAS/NEET schemes and DEWHA's *Energy Use In The Australian Residential Sector* (2008) and the *Victorian Utility Household Consumption Survey* (2007).

Getting better data

Once a large-scale program commences there will be considerable opportunity to collect and analyse the new cost and performance data to inform the ongoing review of the program. The existing uncertainties and data gaps should be initially identified and the implementation should be structured to fill these gaps quickly. The evidence on which the program is based can then continue to consolidate as the program matures.

Ongoing program review should be based on outcomes (reductions in energy expenditure, use or emissions) rather than inputs. This review is essential to optimise the program and provide the greatest opportunity for innovations in technology, marketing and delivery to emerge. These innovations may take time but business investment in seeking these innovations will occur if the incentives are meaningful.

6 The elements of a national energy efficiency program

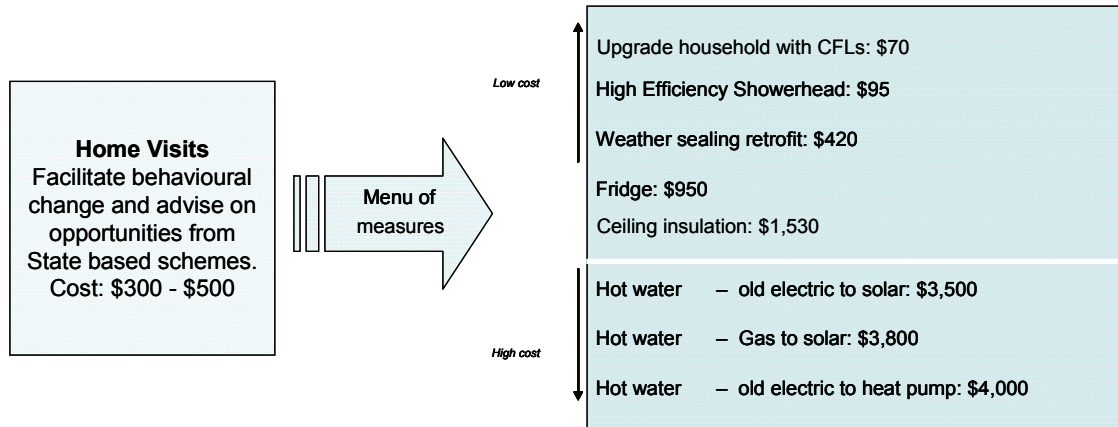
The national energy efficiency program will require substantial funding if it is to meet the objective of providing assistance to all low-income households. It is important therefore for the Commonwealth Government to come to terms with what the likely upper and lower bounds of expenditure per household might be. This will be an important process as it will guide decisions regarding the proportion of CPRS auction revenue required to be set aside for this purpose.

The elements required to deliver maximum benefits from a national energy efficiency program are:

1. **Targeted home visits:** the key to getting the most benefit from energy efficiency measures is matching the optimal mix of measures with the physical condition of the residence. For example, while in-home insulation is likely to be very beneficial in the southern States, in Queensland energy efficient air-conditioning may be more appropriate.
 - The value of the in-home visit comes from this matching process, i.e. getting the right measure at the right cost into the home. Furthermore, by engaging with the individual households, practical information on how to use energy more wisely in the home can be provided. This is particularly useful for low-income households where they are perhaps less likely to be in a position to take-up energy efficiency measures. Moreover, the targeted home visit gives the Commonwealth Government confidence that the efficiency measures are being implemented and actually closing the gap rather than simply having the potential to.
 - In-home visits are the best way to address the split incentive problem for private renters by directing assistance towards more efficient appliances such as fridges where the benefit remains with the tenant.
 - In-home visits enable households to be linked to other State and Commonwealth Government programs such as *Green Loans* and state hardship programs. They reduce the risk of duplication between these various programs.
2. **Packaging:** the value of packaging is that a suite of measures are delivered simultaneously to the household rather than on an ad hoc basis as has tended to be the case under previous schemes. For example, rather than delivering just light-bulbs or just high efficiency showerheads that individually provide marginal impacts, together they can have a noticeable impact on household bills.

The following diagram provides a simple illustration of some of the measures that may be installed as a package to assist the household.

Figure 1.2 The choice of energy efficiency measures facilitated by the home visit



Note, the cost of the home visit is likely to reduce once the program is scaled up.

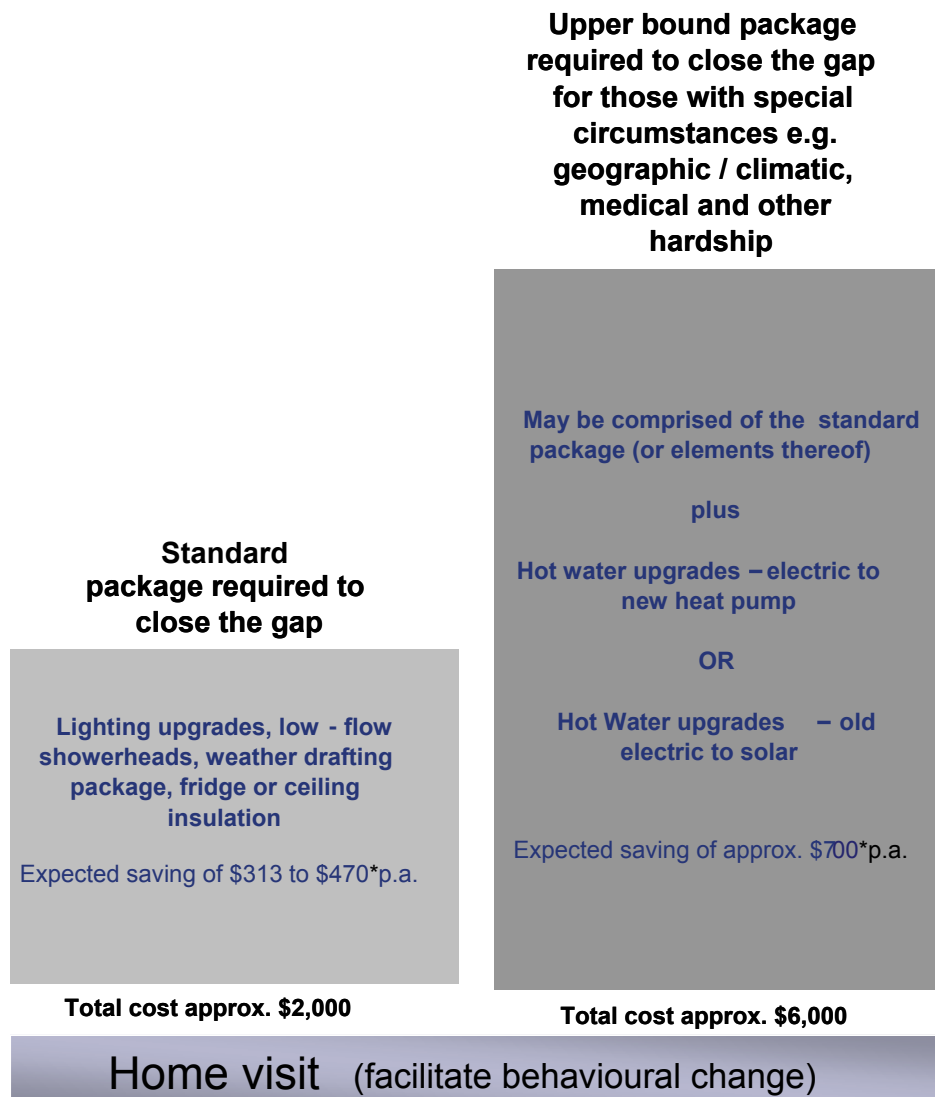
An illustrative approach to tailoring packages of energy efficiency measures to target households

One way of drawing parameters around the likely average and upper bound levels of expenditure required to close the ‘gap’ created by rising energy prices and costs, is to estimate an average level of expenditure for the target household types. To do this, the energy efficiency measures (detailed in the above diagram) can be packaged together in a manner that delivers the required savings (as illustrated in Figure 1.3).

3. Link to community support

The program should seek to establish links with community and local government programs that are able to provide ongoing advice and assistance to target households.

Figure 1.3 The average package required to close the gap



* These savings have been discounted by 30 percent.

The packages illustrated in the above diagram are designed to at least close the gap for the various types of households outlined in Table 1.2. An average package valued at \$2,000 would be made available to the entire target group. It would substantially close the gap for the low to very-low income households detailed in Table 1.2. The maximum savings (measured in terms of the reduction in the cost of energy) for this group of people would range in value of between

\$410 to \$670 depending on the mix of energy efficiency measures required and installed. The reasonably expected savings would be in the range of \$287 to \$469 i.e. 70 percent of maximum savings. Those in the very-low income cohort who have special circumstances, such as those living in remote or rural areas and/or those living in relatively harsher climatic/geographic areas would be eligible for a proportionately greater value of energy efficiency measures reflecting their special circumstances.

The cost of each package includes capital costs of the various appliances and the cost incurred by the Commonwealth Government for the home visits. In order for energy efficiency measures to have their full impact, it is important that they are installed correctly. While it may be tempting to simply deliver various appliances to households, the risk is that those appliances may not be installed at all or be installed incorrectly, and thus fail to cover the gap.

We do not know for certain the proportion of households that already have the various measures included in each of the packages above. Therefore, a crucial step is the home visit which will determine the required package. In terms of estimating the cost to the Commonwealth Government of rolling out this program, we have made some assumptions about the proportion of households that would require each package.

Table 1.5 Estimated cost of national energy efficiency program measures²⁷

Package	No. of households ²⁸	Upper bound cost of each package	Aggregate cost to Government (over 6 years)
Average value required to close the gap	2,567,000	\$2,000	\$5.1bn
Upper bound value based on special circumstances	933,000	\$6,000	\$5.6bn
Total	3,500,000		\$10.7bn

We believe that the above estimates allow the Commonwealth Government to set aside an adequate amount of revenue received from the auction permits to have a degree of certainty about the cost to close the gap²⁹.

In addition to closing the gap, the program will contribute to a significant reduction in CO₂-e emissions.

²⁷ Note, this does not include the cost of administering the program.

²⁸ The number of households has been derived using a combination of data from the Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) and ABS data relating to household types and the composition of household, in terms of the number of adults and children per household type. The method of calculation is outlined in our detailed report.

²⁹ The estimate of approximately 1 million households receiving the upper bound package is potentially on the high side. It is unlikely that the take-up for this program would be this high, i.e. 100 percent.

Training and skill requirements

Skill acquisition will be required in all retrofit measures. Table 1.4 summarises the skill needs of each measure. The full report details these emerging skill needs. Obviously for the measures that require higher skill levels to install will take longer to move these to large scale. Private sector investment in training for a new skills base will only occur where there is a signal that the program has some durability. Without this it is unlikely there will be enough investment to allow the skill base to expand to the necessary scale. The Commonwealth Government should consider allocating additional training places in the relevant areas including training for energy auditors.

7 Implementation and targeting

There are a number of challenges that will be faced in implementing a national energy efficiency program at the scale required. They include:

- determining eligibility and prioritisation;
- coordination at a national scale;
- resource constraints;
- capacity constraints;
- verification of successful implementation (of measures); and
- avoiding unintended consequences or perverse outcomes, such as the creation of a black market for expensive appliances e.g. fridges.

Notwithstanding the above challenges, we have identified the key steps in implementing the national energy efficiency program. They are:

1. establishing eligibility for the program; and
2. identifying and contacting the target households.

Each is explained in turn below.

Who is eligible for the program

Given the difficulties that government is likely to face in trying to identify the very-low income, high energy users, a practical way forward is to make use of the existing information warehoused in the welfare and tax system. This will ensure that establishing eligibility will be a relatively simpler process, leveraging off existing systems and enabling the target households to enter the program. We recommend that the following categories of welfare recipients be considered for inclusion:

- Category 1: lowest income cohort (approx. 933,000 households³⁰)
 - who are in receipt of a full pension or benefit;
- Category 2: broader income cohort (approx. 3,500,000³¹ households³²)

³⁰ Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA), *Statistical Paper No. 3, Income Support Customers: A Statistical Overview 2004*.

³¹ Ibid.

³² The Category 2 broader income cohort comprising 3.5 million households includes the Category 1 (lowest income) cohort.

- who are the holder of a commonwealth health card. This includes holders of:
 - pension concession card (i.e. age pensions, disability support pensions, carer payment, parenting payment single, wife and widows pensions, veteran pensions, other);
 - health care card (i.e. new start, parenting payment, exceptional circumstances relief, youth allowance, sickness allowance) and those entitled to receive the maximum rate of Family Tax Benefit Part A by instalment, and parents caring for children with certain illnesses or disabilities receiving carers allowances; and
- the low-income health card.

Government may consider targeting the program narrowly (Category 1) or targeting more broadly (Category 2).

On the basis of both equity and the need for wide spread energy efficiency, we recommend that the Government target Category 2, i.e. 3.5 million households. If the Government seeks a narrower program, consideration could be given to adding further low-income and vulnerable households to Category 1, namely:

- people in receipt of the low-income tax-offset;
- households receiving the maximum rate of Family Tax Benefit Part A; and
- households that derive more than 50 percent of their income from government pension or benefits.

It is reasonable to assume that the households in the above categories are the most in need. In addition to households in receipt of pensions and benefits, low-income working families will be picked up by the low-income health card category, the low-income tax offset or the Family Tax Benefit Part A category.

Determining the level of benefit

As outlined above the eligible households will receive different levels of support depending on their level of need. The highest priorities are low-income households which also have one or more of the following characteristics:

1. are high energy users (as illustrated by energy bills over a 12 month period)
2. have a single wage earner or two low-income earners and dependent children (illustrated by receiving full Family Tax Benefit Part A)
3. have one or more householders with a chronic illness

4. are restricted in their access to natural gas and are therefore dependent on electricity or other fuels for water heating
5. are in areas with severe climatic factors (such as extremely cold winters).

These household will receive higher levels of support and be targeted for inclusion in the program as soon as possible. Prioritising these households will ensure the greatest financial and greenhouse gas savings for individual households and maximise the Commonwealth's return on investment in the shortest time frame.

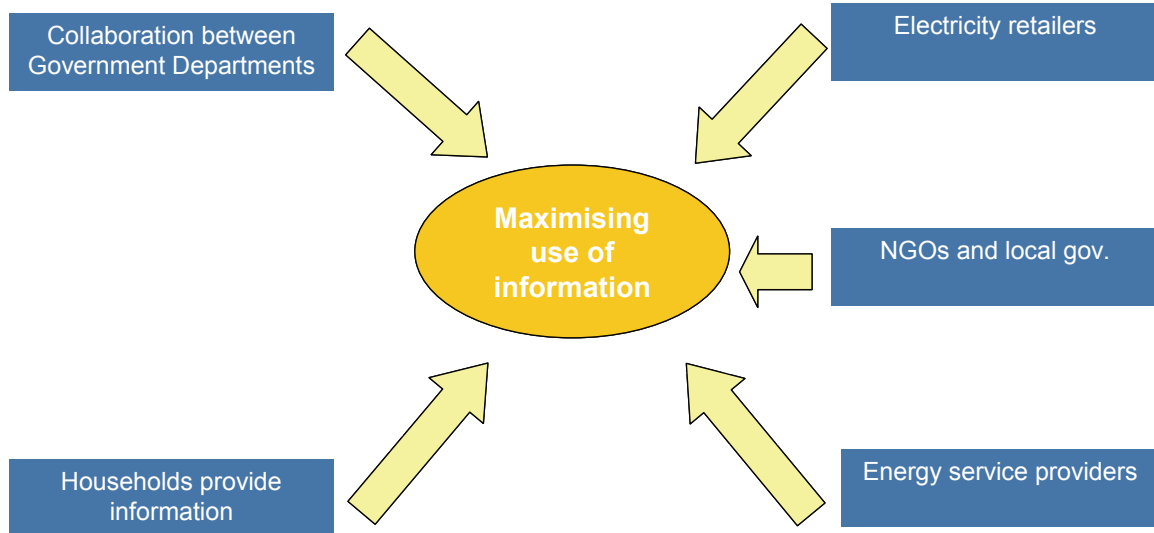
In addition to these household types, measures in public housing and social housing should be prioritised. Unlike rental properties eligibility criteria ensure that these households will remain tenanted by low-income households.

Identifying and contacting the target households

The challenge for the Commonwealth Government in maximising participation in this program is to identify the low-income and most vulnerable by making use of information available in the private and public sectors. This is important because we suggest a comprehensive approach that in the first instance (Year 1) draws a very wide net. This will rely on multiple information sources to ensure target groups are not inadvertently excluded. Even in the very successful *Warm Front* scheme in the U.K., it was noted that the households using relatively higher levels of energy had not been adequately identified. By using multiple information sources it is more likely that low-income, high energy users will be identified and assisted.

In Australia, the Commonwealth Government has a number of information sources to draw upon as illustrated in Figure 1.4.

Figure 1.4 Maximising the use of information



Each component represents an alternative option available for collecting information and contacting the target group. To ensure that the widest possible net is cast, the Commonwealth Government should make use of a combination of these options. Each is outlined further below:

Option 1: Electricity retailers would contact customers in the target group within their networks and offer them access to the program. The program could be provided by the retailer itself or the retailer could provide the information about customers who want to be on the program to government or other energy service providers. Note, the retailer would not be expected to provide any more information than the name and address of the customer who has consented to join the program.

Since retailers can use consumption information to identify high users, the Government would pay retailers to make the initial contact. Information currently held by retailers includes:

- relevant concession, electricity use and basic information around home energy use e.g. electric hot water, tenancy, style of house etc.

Option 2: Households provide information by telephoning call centres in response to advertising campaign or Centrelink correspondence. Since Centrelink administers most welfare payments, the Government could use the Centrelink database to identify people who fall in Category 1 and 2 (described above). While privacy issues would need to be overcome before involving Centrelink, the Centrelink data is of a geospatial nature and as such, would be used to identify those households in particular hardship (whether, geographic, i.e. rural and remote, climatic, medical or otherwise). The Centrelink database could also be used to identify those low-income (medium-high energy users) living in Aboriginal and Torres Strait Islander communities.

Option 3: Energy service providers, i.e. companies, local government authorities, and non-government organisations (NGOs), would tender to contact potential target households and provide the home visits and energy advice to them. The tenders could be targeted to particular geographic areas or groups e.g., outer metropolitan suburbs, country areas without connection to natural gas, remote and indigenous communities, people with specific medical conditions.

Option 4: Government departments share information relating to target households – consider the Centrelink example in *Option 2* above.

Linkages with State-based schemes

At the very least, the packaging of energy efficiency measures funded by the Commonwealth should target those energy efficiency projects which are not the focus of the State Governments³³. However, in the absence of harmonisation with State-based schemes the Commonwealth and States should attempt to pool resources (including financial resources). It is acknowledged that this may be too complex, so at the very least in order to prevent multiple schemes visiting the same households, the Commonwealth and State-based scheme administrators should share information from a very early stage.

Our research (and discussions with State Government departments) shows that while State-based scheme are targeting households, in general they do not specifically target low-income households. For example, the VEET will target 200,000 households in Victoria per year without specifically focusing on low-income households. In New South Wales the NEET scheme is expected to focus on approximately 200,000-600,000³⁴ households per year. New South Wales is also proposing a program targeted at low-income households but on a significantly smaller scale than proposed in this paper.

Other State and Commonwealth based schemes include:

- **Solar feed-in tariffs**

- South Australia recently introduced a feed-in tariff of \$0.44 per kWh of electricity for photovoltaic systems. This is double the standard retail price. To qualify, the system must be small scale (capacity up to 10 kilovolt ampere) and be operated by a small electricity customer (consuming less than 160 MWh per hour).
- Queensland also recently legislated a feed-in tariff of \$0.44 per kWh of electricity for photovoltaic systems. This is approximately triple the general domestic use tariff of \$0.154 per kWh of electricity.
- ACT introduced an exposure draft bill for feed-in tariffs for photovoltaic systems which proposes a default feed-in tariff premium of 3.88 times the highest retail price of the day.

³³ Our detailed report provides a comprehensive review of all State based schemes, outlining the specific energy efficiency products/services and measures targeted.

³⁴ It is difficult to know exactly how many households will be engaged through the NEET scheme as the design of the scheme is still in its draft form.

- Victorian feed-in tariffs for electricity generated from solar, wind and biomass are required only to be fair and reasonable. A premium feed-in tariff of \$0.60 per kWh is expected to come into effect in 2009³⁵.
- **Rebates for energy efficiency measures**
 - The Commonwealth Government offers \$8,000 rebates for solar power, \$1,000 rebates for solar hot water systems, \$500 rebates for grey water piping and rainwater tanks, \$500 rebates for landlords to install insulation. In addition, the Commonwealth Government is looking to establish *Green Loans* which would provide low interest loans of up to \$10,000 for solar systems and water and energy savings measures.
- **The National Framework for Energy Efficiency (NFEE)**
 - In collaboration with the Commonwealth Government, State Governments have developed the NFEE. This aims to capture the potential of energy efficiency and has established improved standards for energy efficiency in residential and commercial buildings and energy efficiency reporting for larger energy users. The first stage is well advanced and the second stage commenced in July 2008. Stage 2 will include the continuation of existing measures and the introduction of new measures. The implementation committees cover energy efficiency measures relating to buildings - commercial and industrial; appliances and equipment; government; trade and professional training and accreditation; consumer information and finance. For example, the following household electrical equipment must have energy labels:
 - single phase air conditioners;
 - refrigerating appliances;
 - dishwashers; and
 - clothes washers.

Some further schemes across the States include:

- Queensland:
 - Sustainable Housing Regulation;
 - Phase-out Electric Storage Hot Water System;
 - \$7.25 million Climate Smart Homes Rebate;
 - \$1.5 million Climate Smart Living Education Campaign; and
 - Home Energy Wise Tools (includes an energy efficiency self-audit tool).

³⁵ See www.dpi.vic.gov.au

- New South Wales:
 - Greenhouse Gas Abatement Scheme (GGAS); and
 - Various rebates (gas hot water up to \$300, solar and heat pump up to \$1,200, ceiling insulation up to \$300).
- Victoria
 - Energy and Water Task Force; and
 - Five Star Requirements for New Homes and Flats.

Our detailed report provides a comprehensive review of these schemes. The main point here however, is that while the schemes do not target low-income households, they do provide the Commonwealth and the States a strong basis to pool information (sharing data and public information campaigns) and agree how the schemes will complement each other to reduce costly duplication.

In New South Wales and Victoria the NEET and VEET schemes will cover large numbers of households with energy efficiency programs over the next 5 years (e.g. The VEET scheme is expected to cover 200,000 households per year). It is likely that these market-based schemes will focus on middle and upper income households where the costs of abatement are generally lower. The state programs will accordingly provide support for middle and upper income households but be potentially regressive in providing less support for low-income households.

Accordingly it is appropriate for the Commonwealth Government to complement the State-based scheme by making low-income households the first priority for energy efficiency expenditure.

Complementary measures

The mix of compensation responses will include direct payments, tax adjustments, vouchers and energy efficiency retrofit services. The proportions in this mix will change according to the households' needs. The evaluation of the trial period will inform the design of the program to ensure the most effective, feasible, efficient and equitable mix of compensatory tools. For example in private rental housing some energy efficiency measures become part of the house value and the compensatory effect for a low-income resident is lost if they move house. Portable measures such as appliance buybacks or upgrades should be proportionally higher in these cases. However public housing will always remain as low-income housing so retrofits can be durable. These may be best done in conjunction with the States using tied grants. Increasing income tax thresholds, on its own, will not adequately compensate many low-income earners.

In addition to linking-in with state-based schemes we believe that certain additional measures that may complement the rollout of a national energy efficiency scheme include the following:

- tax considerations; and

- mandatory energy efficiency standards.

Each is discussed in turn below.

Tax considerations

According to the *Green Paper* the Government commits to:

Increase payments, above automatic indexation, to people in receipt of pensioner, carer, senior and allowance benefits and to provide other assistance to meet the overall increase in the cost of living flowing from the scheme.

Increase assistance to other low-income households through the tax and payment system to meet the overall increase in the cost of living flowing from the scheme³⁶.

We believe that assistance delivered via the tax system can complement a national energy efficiency program and fill the gap between the positive benefit provided by energy efficiency and the impact of the CPRS. We also believe that the tax system can be used to provide incentives for market participants to enter the market (as either a producer or consumer) of energy efficiency products/services. For example, incentives could be provided to private landlords to install energy efficient products (such as, solar heating, more efficient insulation etc.) by accelerating the depreciation of expensive capital items thus improving the payback periods (i.e. rate of return) for landlords.

Mandatory energy efficiency standards and building standards

We believe that initiatives such as, the National Framework for Energy Efficiency should be strengthened at the Federal and State levels, to ensure that energy efficiency measures relating to buildings (commercial and industrial), appliances and equipment, etc. are taken up by market participants sooner rather than later. The introduction of the CPRS in 2010 means that standards would need to be improved and strengthened (as far as possible) before this time to ensure that commercial builders and investors do not making capital investments which may prove to be inefficient (from an environmental and financial perspective) after the introduction of the CPRS.

Green Loans

The delivery mechanisms for the home sustainability assessments and the low cost items (CFLs, showerheads, timers) proposed in the *Green Loans* scheme could be readily aligned with the proposals in this paper. This would reduce implementation costs and provide greater coverage for both low-income earners and all other households.

³⁶ Ibid.

8 Delivery - engaging with the private and community sector

Our analysis suggests that a tender-based system is the most efficient means of drawing upon the knowledge, capability and capacity of the private and community sectors in delivering home visits.

Participation in the tender system would be through the granting of a license by the relevant government department/agency. The license would only be issued once the participants have satisfied a number of conditions established to ensure that only reputable participants who have the necessary skills, capacity, capital and capability to meet the aims and objectives underpinning the tender.

Possible tenderers include energy retailers, private energy service companies, State Government, Local Government, and non-government organisations.

In summary, a tender may involve the following steps:

- The central concept in the model is to have the Government award contracts to energy efficiency service providers, who visit households to deliver and install packages of energy efficiency measures that are optimal given the characteristics of the house.
 - The providers would also give advice on using energy more efficiently (e.g. through adjustment of thermostats and air conditioners or switching off 'stand by power').
- Contracts would be awarded after tenders based on number of households to be visited over the contract period and the meeting of certain conditions.
 - It will be crucial that the tender mechanism provides sufficient incentives for both speed of implementation and adequate coverage across the target households, including remote and indigenous communities.
 - One option is to establish separate tenders for the delivery of energy efficiency measures to particular groups of households that may be difficult to engage.
 - Separate tenders may represent a mechanism by which the Government can encourage specialist providers who have a deep understanding of how to reach particular household groups to productively engage in the program.
- Payments to the energy efficiency service providers will be made once the savings from a sample of homes visited had been validated.

Public housing

There are approximately 1.23 million low-income households living in public housing in Australia. Energy efficiency services could be quickly and efficiently provided to these households through state housing authorities. We recommend that the Government contract with state housing authorities to provide these energy upgrades in the early years of the program.

Experience in other jurisdictions

Notwithstanding the advantages of the tender system outlined above, other systems for delivering in-home visits have been implemented elsewhere. The following breakout box considers the experience of the following programs:

1. *The Victorian Energy and Water Taskforce*
2. *The Weatherization Program – United States*
3. *The Warm Front program – U.K.*

Victorian Energy and Water Taskforce

The State Government funded *Victorian Energy and Water Taskforce* provides an audit and retrofit service which focuses on public housing in Neighbourhood Renewal areas. By 2011 the taskforce will retrofit an additional 8,000 homes. The retrofit is usually of low-cost items and the average expenditure per home is \$700. Since commencing in 2003, the project has retrofitted over 4700 households in over 25 towns and suburbs. Average savings per household are 9 percent on electricity bills and 16 percent on gas bills. Estimates place the financial savings at approximately \$130 per annum per household.

Weatherization Program – United States

The *Weatherization Program* is a long running federally funded program designed to decrease the energy burden on low-income households by improving household energy efficiency. It services over 100,000 homes per year. Eligible households are audited by professionally trained weatherization crews who determine the most cost effective measures appropriate for each home. The relevant measures are then implemented free of charge. The average expenditure is \$2,826 USD. Detailed evaluations have suggested that every one dollar of federal funding returns approximately \$2.60 in energy and non-energy benefits.

Warm Front – U.K.

The *Warm Front* program targets households suffering from fuel poverty. 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. The budget for the program expanded from GBP 190 million in 2005/06 to GBP 380 million in 2007/08. Key aspects of the project include an emphasis on quality through customer service and monitoring/certification.

Another mechanism may be to impose certain obligations on energy retailers to deliver energy efficiency measures to low-income households using their existing schemes. An example is the CERT scheme in the UK. Below are descriptions of two schemes that are currently in place, one in Australia and one in the U.K.

VEET scheme

The VEET scheme is a market-based obligation on energy retailers to reduce the emissions of the households they service. The scheme will begin operation in 2009, with an annual target of reducing household greenhouse gas emissions by 2.7 million tonnes (Mt) per annum.

The basic operation of the scheme as outlined by the Department of Primary Industries (undated) is summarised as follows. The Government sets targets for energy retailers to reduce household energy consumption. In order to reach these targets energy retailers must surrender approved energy certificates. Energy certificates are generated when an approved provider implements eligible energy efficiency activities in households. Approved providers are likely to include energy retailers, appliance retailers, small businesses including tradespeople and community organisations. Energy certificates can be generated by a range of household energy efficiency measures e.g. providing or subsidising energy efficient light bulbs, insulation or appliances. As outlined earlier, the project does not specifically target low-income earners.

Carbon Emissions Reduction Target (CERT) scheme (formerly Energy Efficiency Commitment-EEC) – United Kingdom

The *CERT* is a statutory obligation on utility companies to reduce householders' emissions. Prior to the *CERT*, the *EEC* began in 2002 and its predecessor began in 1992. The *CERT* budget is estimated to stimulate around GBP 2.8 billion of investment in households energy efficiency; approximately GBP 1.5 billion 2008/11 to be delivered in the priority group which includes low-income and elderly households. The program involves subsidised installation of insulation, efficient appliances and lighting. Forty percent of the greenhouse gas savings must come from the priority group. Grants for the priority group are around 90 percent of the installation cost (grants for standard households are around 66 percent).

There are three main concerns with using broad based schemes as the above to delivery energy efficiency measures to low-income households. Firstly, since the costs incurred by retailers in complying with the requirements of the scheme are distributed across all customers, some argue that these schemes are regressive since low-income households bear an equal proportion of the costs associated with administering the system. Secondly, many low-income households face particular challenges in implementing energy efficiency measures and energy service providers that understand these challenges and specialise in low-income households are more likely to be successful. Thirdly, it is likely that energy service providers will target higher income, higher energy using households where the average abatement costs are lower.

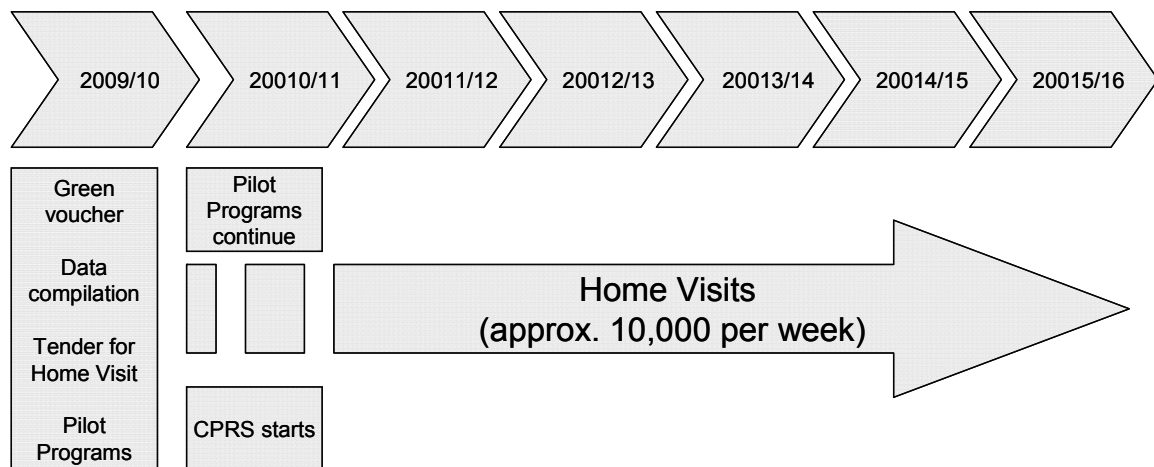
A number of high quality programs provide energy efficiency strategies to households in financial hardship. In Victoria these programs include the services provided by Kildonan Uniting Care for households facing difficulty paying their utility bills. A similar program – WEST – is operated in the ACT.

Implementation

The timeframe for implementation is largely dictated by the implementation strategy of the broader CPRS. In general however, in order to provide the necessary protection, we propose that the Government commit to reach all target households within 5 years of the introduction of the CPRS (i.e. by end 2015). It is recommended that the national program start on 1 January 2009 and run for 7 years. This would involve approximately 10,000 households being visited per week over the life of the energy efficiency scheme. There is no doubt that this is ambitious. However, the GGAS scheme in NSW delivered up to 5,000 household visits per week at its peak in one state alone. The scale of this scheme will provide the private sector with a signal that the Government is committed to this course of action, allowing firms and community organisations to commit resources knowing that the necessary certainty underpins the scheme.

The program should aim to cover all 3.5 million targeted households in the 7 year period. It is acknowledged that some of the targeted households may not participate in the program. However, by aiming for 3.5 million households some low to middle-income households just outside the income threshold can also be covered (e.g. where the program is delivered to a particular geographic area)

Figure 1.5 Timeline and implementation milestones



2009/10

In 2009/10, we propose that the Government take initial steps by issuing *Green Vouchers* to all low-income households and conduct pilot programs.

The *Green Voucher* would be redeemable by the household in exchange for energy efficiency products and appliances up to the face value of the voucher (say up to \$200). The main advantage of this is that the delivery of the energy efficiency measures utilises the existing retail network. The *Green Vouchers* could fully pay for low cost products like CFLs or act as a rebate on higher cost items.



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The ramping up will help the Government fast track the implementation of the national energy efficiency program. The programs would be rolled out in five states and provide the Government with valuable intelligence on which measures are most in demand. The pilot programs would also provide useful feedback in terms of which measures are most effective in reducing energy consumption.

At the same time, having established a database of target households, contact would be made with low-income households via a telephone survey to determine if they wish to join the program. In particular the survey would:

1. confirm the living conditions and financial status of the target household;
2. gather preliminary information on the condition of the house and the level of expenditure on energy; and
3. begin to develop a more robust understanding of the minimum package required to close the gap and the associated cost of delivery.

This information at hand would allow the Government to set the conditions for initial tenders.

9 Tenure

The tenure arrangements for low-income households will affect the most appropriate implementation for large-scale energy efficiency programs. Table 1.6 shows the primary tenure types for low-income households. Considering tenure alongside housing costs as a proportion of income gives a better indication of those households in greatest need of government support for energy efficiency assistance. Priority areas for assistance are outlined below.

Table 1.6 Low-income households tenure

Tenure type	Percentage low-income households	Housing costs as a proportion of gross income	Estimated number of households '000
Owner without a mortgage	45%	5%	743.7
Owner with a mortgage	19.6%	29%	318.4
Renter			
State and territory housing authority	7.6%	18%	123.3
Private landlord	22.5%	32%	365.0
<i>Total renters</i>	<i>31.8%</i>	<i>28%</i>	<i>514.9</i>
			1,621.0

Note, numbers are based on 2nd and 3rd deciles of equivalised income.

Source: ABS Housing occupancy and costs, Australia 4130.0. 55. 001 (2005/06 p41-42).

Private rental market

Private renters make up a significant proportion of low-income households (22.5 percent) and spend a significant proportion of their gross weekly income on rent (32 percent). In addition to low levels of disposable income, private renters are restricted by the split incentive between landlord and tenants and a lack of appropriate information.

Private renters should be an early priority for the national energy efficiency program.

The Brotherhood of St Laurence conducted a roundtable which developed specific recommendations for addressing low-income households in the private rental market. Table 1.7 outlines some critical issues for landlords and tenants respectively and our proposed responses to ensure the program proposed here reaches the eligible low-income private renters.

Table 1.7 Issues for landlords

Issue	Our response
Addressing the split incentive between builder/landlord and the tenant	Provide measures to all eligible low-income households in the private rental market (as is the case with the <i>Warm Front</i> scheme).
Reducing the transaction costs for the landlords (including time and hassle factor)	Minimise the time and hassle imposition on landlords by brokering all the arrangements. Brokering should be carried out by either the home assessors, a centralised body (as is the case in the United Kingdom with EAGA); or engaging commercial brokering services such as those who conduct bill connections and disconnections when tenants join and leave households.

Table 1.8 Issues for tenants

Issue	Our response
Lack of transportability of energy efficiency measures	Prioritise moveable fixtures in private rental properties (such as fridges).
Tenants concerned about directly engaging the landlord	Utilise brokering service rather than direct engagement (see above).

Further recommendation for private rental

The Brotherhood of St Laurence roundtable on climate change and low-income private renters has made further recommendations (see www.bsl.org.au for *Enabling low-income households in the private rental market to respond to climate change*).

Public Housing

As outlined above, public housing provides a specific and significant opportunity for energy efficiency because it is owned and controlled by a small number of government agencies. Public housing should be a priority as the measures can be rolled out on a wide scale by the Government early in the program. The key challenge involves ensuing cooperation between the Commonwealth and State Governments. The best method to address public housing will involve tailored programs administered by the relevant state and territory housing authorities. These programs should be funded through revenue generated by the CPRS.



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First home buyers

Approximately 14 percent of first home buyers with a mortgage are from lower income households and two thirds of these households spend more than 30 percent of their gross income on housing costs. The debt burden these households face will make it difficult to commit to further expenditure for energy efficiency.

10 Summary of budgetary implications for the Government

This section outlines the main task, activities and associated costs relating to the rollout of a national energy efficiency initiative. We attempt to make some broad estimates of the costs that are likely to be incurred by business and the Government. It is important to remember that the costs outlined in Section 5 and 6 in relation to the energy efficiency measures are the costs of procuring and installing the measures. Aside from these costs, the Government will also incur administrative and transaction costs.

The estimated cost of the program is outlined in Table 1.9 below. The capital costs and associated administrative costs are detailed.

Table 1.9 Budgetary requirements – main items and activities

Activity	Year 1 Jan 2009 – Jun 2010	Year 2 2010/11	Year 3 2011/12	Year 4 2012/13	Year 5 2013/14	Year 6 2014/15	Year 7 Dec 2015
Capital, installation and delivery costs							
Green Voucher	\$70m						
Pilot program	\$~450m						
Energy efficiency rollout		\$1.75bn	\$1.75bn	\$1.75bn	\$1.75bn	\$1.75bn	\$1.75bn
Sub-total	\$520m	\$1.75bn	\$1.75bn	\$1.75bn	\$1.75bn	\$1.75bn	\$1.75bn
Start-up and administration costs							
Government start-up (once-off)	\$66m						
Government scheme administration (annual)	\$10m	\$10m	\$10m	\$10m	\$10m	\$10m	\$10m
Total	\$596m	\$1.76bn	\$1.76bn	\$1.76bn	\$1.76bn	\$1.76bn	\$1.76bn

Assumptions underpinning Table 1.9

The total requirement over the 7 years is approximately \$11.2 billion. An allocation in the Government's budget would be required in the first year (2009/10) to fund the \$596 million. The remaining funds would be allocated from the auction revenues. The detailed assumptions underpinning the figures in the above are outlined in our detailed report. Below is a short description of each assumption.

Capital, installation and delivery costs

- Green voucher: it is assumed that 3.5m low-income households receive a green voucher valued at \$200, i.e. 3.5 million x \$200 = \$700 million;
 - It is assumed that only 10 percent of vouchers are taken up. Therefore, \$700 million x 10 percent = \$70 million.
- Staged program: it is assumed that up to 125,000 visits are conducted in the first year;
 - 75,000 visits to households at an average package cost of \$2,000 per household, i.e. total cost 75,000 x 2,000 = \$150 million.
 - 50,000 visits to households with an upper bound package cost of \$6,000 per household, i.e. total cost 50,000 x 6,000 = \$300 million,
 - Total cost of delivering the pilot program to 125,000 households is \$450 million.
- The sub-total is arrived at by adding the cost of the green vouchers (\$70 million) and the cost of the pilot programs (\$450 million), i.e. \$70 million + \$450 million = \$520 million.
- Energy efficiency rollout: it is assumed that energy efficiency measures at an upper bound cost of \$6,000 are rolled out to 155,500 very-low income households every year (over years 2-7).
 - It is also assumed that energy efficiency measures are rolled out to 407,000 low-income households at an average cost (required to close the gap) of \$2,000. Therefore, 155,500 x 6,000 = \$933 million, 407,000 x \$2,000 = \$814 million.

Start-up and administrative costs

Following is a breakdown of the scheme set-up costs and associated ongoing administrative costs.

Scheme set-up costs

The following table outlines the steps we consider necessary to set-up the National Energy Efficiency Scheme.

Table 1.10 Detailed breakdown of scheme set-up costs

Step	Task
1	Establish objective and scope of the National Energy Efficiency Scheme
1a	Consult with stakeholders on objective and scope
1b	Determine appropriate government department responsible for implementation
1c	Develop final policy document
2	Define the scheme
2a	Define the scope and scale and energy efficiency activities that will be included in the scheme
2b	Determine what the tender arrangements will be i.e. fixed price for number of households served or fixed number of households served for lowest price
3	Tendering process
3a	Design of tender including detailed contractual arrangements
3b	Issue of tender
3c	Evaluation and assessment of tenders
3d	Contract negotiations with successful tenderer
4	Provide tenderer required data and information
5	Information and marketing campaign to inform community about the scheme

Unfortunately, there is very little detailed data available on the administrative costs incurred in both establishing and running the existing energy efficiency schemes. Nevertheless, we have taken accepted administrative cost benchmarks derived by state regulators in Regulatory Impact Statements (RIS) for the VEET and VRET schemes as a guide to the likely administrative costs that will be incurred by the Commonwealth.

Costs incurred by government

In its May 2008 budget, the Victorian Government allocated \$10 million to the establishment of the scheme administration of the VRET and VEET schemes. The RIS for the VEET (issued September 2008) assumed that half this sum (\$5 million) was to be allocated to the start-up of

the VEET scheme. The costs comprise staff hours for policy officers, technical experts and consultants, stakeholder consultation and associated media. These costs are borne, in the first instance, by government. To facilitate our analysis, we used the VEET RIS estimates as an anchor point as outlined in Table 1.11 below.

Table 1.11 Estimated administrative costs incurred by government

VEET scheme		National Energy Efficiency Scheme	
No. of households	Administrative cost to the Government	No. of households	Administrative cost to the Government
200,000	\$5m	3,500,000	\$65.6m
This cost per households is \$25.00		We apply the same (VEET) unit cost for administration to the National Energy Efficiency Scheme, however, assume benefits from returns to scale of 25%. Therefore, the unit cost is \$18.75	

In order to estimate the ongoing administrative costs to the Government, we took as a guide expenses incurred by existing government agencies charged with administering programs with similar characteristics. For example, the National Water Commission was established in order to administer grants and funding to the value of around \$2 billion for various water use efficiency projects. In 2006/07 the NWC incurred expenses of approximately \$9.6 million in discharging its functions³⁷. It appears reasonable to assume that similar annual administrative expenses are likely to be incurred by the agency responsible for the delivery of the *National Energy Efficiency Scheme*. This assumption is reflected in Table 1.9 as \$10 million as annual administrative expenses.

A final note regarding the allocation of permit revenue

We recognise that one of the most complex and difficult issues confronting the Commonwealth Government will be the distribution of funds generated by the auction of permits.

Our study looks at one aspect of this. That is, the amount of funds which are needed to support a national energy efficiency program. However we recognise that there will be other critical expenditures needed from the proceeds of auction funds. These include:

- adjustments to CPI base payments for income support;
- additional cash compensation to households (beyond the CPI) to meet the additional costs of electricity prices particularly in the early years of the CPRS while a national energy efficiency program (if adopted by the Commonwealth Government) is being rolled out; and

³⁷ National Water Commission, *2006-07 Annual report*, p75.

- assistance to middle-income households which might be made up of some elements of a national energy efficiency program but on a more means tested basis with the expectation that these households will contribute some funding of their own towards the installation of energy efficiency initiatives in their homes.

Our scheme could be adapted to middle-income households. It will be important to carefully model the mix of cash assistance and assistance to middle-income households in order to set aside the correct amount of auction money needed to assist households more generally to adjust to the increase in electricity prices arising from the CPRS. This has not been the scope of this exercise carried out by KPMG and the Brotherhood of St Laurence. Our focus instead has been to advocate for the development and implementation of a national energy efficiency program targeted to a broad range of low-income households. We strongly believe that this represents a fundamental building block and foundation of any sustainable initiative to assist low-income households with rising energy costs and to engage them in the task of improving energy efficiency.

When one considers all the elements of a comprehensive approach to assist Australian households, that is:

- a national energy efficiency program along the lines we propose;
- adjustments to CPI already committed by the Commonwealth Government;
- additional cash compensation needed to assist households particularly before energy efficiency programs can be rolled out, and
- the need to assist middle-income Australians,

then we believe that the Commonwealth Government should commit around half of auction funds towards household assistance as proposed by Ross Garnaut³⁸ in his draft report.

Some simple scenarios highlighting the benefits of energy efficiency actions

At \$20 per tonne of CO₂ – e, the total funds available to the Government in the first year of the CPRS is \$9.72 billion (given a total quantum of emissions of approximately 480 million tons). The first challenge for the Government is to determine the most optimal use of these funds. As stated above we recommend that the Government set aside at least \$1.76 billion per year after the commencement of the CPRS to facilitate the rollout of a large-scale national energy efficiency program for low-income households. The table below outlines the savings that may accrue as a result of the energy efficiency program at different carbon prices.

³⁸ Garnaut Climate Change Review, *Draft Report, June 2008*.

Table 1.12 Estimated benefits of the national energy efficiency program

Assumptions regarding the cost of carbon	Costs/savings in NPV terms	Comment
\$20/t CO ₂ -e		Assumes carbon price starts at \$20/t and trend up to \$34/t by 2021/22 (i.e. 5.47% per annum)
Savings accruing to households from the energy efficiency program	+\$14.0bn	
Cost of energy efficiency program	-\$8.7bn	
Total benefit of the program	+\$5.3bn	
\$40/t CO ₂ -e		Assumes carbon price starts at \$20/t and trends up to \$45/t by 2021/22 (i.e. 8.45% per annum)
Total benefit of the program	+\$8.4bn	
\$60/t CO ₂ -e		Assumes carbon price starts at \$20/t and trends up to \$60/t by 2021/22 (i.e. 11.61% per annum)
Total benefit of the program	+\$12.4bn	

Note, it is assumed that the discount rate is 6% (to facilitate the NPV calculations).

According to Table 1.12, assuming a carbon price of \$20/t (of CO₂-e) that increases by approximately 5.45 percent per annum over the period 2010/11 – 2021/22, the cost of the CPRS on low-income households is approximately \$16.7 billion (in net present value terms). The cost of a national energy efficiency program (such as that described in this report) is approximately \$8.7 billion in NPV terms over the same period. The saving that would accrue from a national energy efficiency program (over the same period) is approximately \$14 billion³⁹, representing a total benefit to the community of \$5.3 billion.

At \$20/t (of CO₂-e) the net benefit of the program is a saving of approximately \$5.3 billion to the community, at \$40/t (of CO₂-e) the saving is approximately \$8.4 billion and at \$60/t (of CO₂-e) the net saving to the community is approximately \$12.4 billion.

³⁹ This assumes that the total savings that accrue to households are in the order of \$470 to \$700 in the first year of the CPRS, increasing proportionately with the price of carbon.

11 Recommendation

Table 1.9 provides an outline of the budget required to facilitate the proposed implementation plan. In summary this report recommends:

1. Government commit at least 50 percent of auction revenues to low and middle-income households.
2. Government should commit to spend approximately \$596 million from 1 January 2009 to 30 June 2010:
 - through the delivery of *Green Vouchers* to all low-income households (approx \$70 million); and
 - establishing the national energy efficiency scheme including the collection of information, design of delivery mechanism and preliminary contact with target households, home visits and pilot programs (approx. \$450 million).
3. Government should implement a national energy efficiency program involving a home visit for approximately 3.5 million low-income households over the next 7 years at a total cost of approximately \$11.2 billion.
4. Low-income households should be provided with packages of assistance with an average value of \$2,000 and an upper bound of \$6,000 (which will depend on location and the condition of their home and special circumstances).
5. Delivery should be achieved through harnessing of private sector expertise, via a tender process, and enterprise with the knowledge and experience of government and non-government agencies.
6. Various energy efficiency schemes should begin coordination now.

We recognise that substantially more work needs to be carried out with Commonwealth Government departments in assessing the various policy options and associated costs. Ultimately, the scale of the scheme will be decided and informed by the trajectory and the available amount of money in the auction.

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