

**ROLE OF FINANCIAL PRODUCTS FOR HOUSEHOLD
GREENHOUSE ACTION**

Report

Prepared for the Australian Greenhouse Office

by

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EXECUTIVE SUMMARY

This report, commissioned by the Australian Greenhouse Office, identifies and assesses the role of financial products in assisting to reduce greenhouse gas emissions from the residential sector.

The report documents the findings of the research and outlines options for the development of products.

For the purposes of this work residential greenhouse emissions are taken to be the **emissions directly or indirectly attributable to energy use within the household**.

The issue of reducing greenhouse emissions is addressed principally through increased overall efficiency in fossil energy consumption. Financing the adoption of higher energy efficiency, or the increased use of renewable energy we include within the expression "energy efficiency finance".

The key stakeholders in the issue of energy efficiency finance are those whose actions or decisions will contract or expand the extent of adoption of energy efficiency assisted by access to financial products.

Householders/Consumers, financial institutions and several classes of suppliers of energy efficiency are the primary immediate primary decision-makers and stakeholders.

To the extent that it wishes to accelerate or transform energy efficiency markets government is also a stakeholder. Government is a different kind of stakeholder however. Its interest is not in relation to each specific decision, but occurs at an aggregate level, having regard to total fossil energy use and emission outcomes for the household sector.

However, although government may have a social objective in mind (cleaner air, less risk of global warming), it should not presume that individuals or firms will predominantly act with social objectives in mind. Despite the existence of genuine altruism in individuals and firms, the behaviour of individual stakeholders will be expected to remain unchanged unless some relevant new incentive, new information or new opportunity presents itself which also satisfies and advances the private goals of the primary participants. Thus primary appeals to altruism or social goals only are likely to have limited effects, unless the social goal is felt immediately and personally.

In this study we focus principally upon the specific issue of **finance as a catalyst (or barrier) to the take-up of proven, commercially available products, services and technology** now in the marketplace for the household sector.

Is there an artificial shortage of finance for household energy efficiency - ie are there people who have sufficient means prudently to afford to purchase energy efficiency on credit products but who are locked out for lack of appropriately structured products.

Only a tentative answer can be provided at this stage, but the answer to the above question seems to be :

- that there may well be householders whose net income after fixed commitments and energy bills would be adequate to service the loan required for an energy efficient home whereas they would not be able to service the loan on a standard home; however applying standard credit assessment to their application gives no credit for significant savings available for servicing a loan on an energy efficient home.
- that a standard means of certifying the performance of the energy efficient home (or major improvement alterations) will soon exist on a national basis for the information of consumers, together with accredited raters who can provide this service at a cost (order of \$100-\$150) that could be acceptable to consumers within the scale of other fees and certificates required for mortgage finance
- that, in the case of appliances, and minor retro-fitting it is possible that a case might be theoretically made for adjusting net income to service the loan (so as to qualify greater permissible debt); however the scale of energy consumption for most individual appliance purchases is lower than the scale of energy implied in the house purchase decision.
- that the transaction costs of separately identifying appliances as energy efficient at the point of sale, and qualifying them for a differentiated financial product compared with other standard appliances are likely to be too high to support an efficient differentiated financial product at the general consumer retail level.
- that reduced transaction costs for achieving a segregation of appliance sales to permit specialised financial terms might be achieved by aggregating the transactions eg to the level of an industry or a utility and ensuring transactions only involve high efficiency.

It is unlikely that energy efficient finance will develop on its own. Financial institutions do not know enough about energy efficiency investment to consider tailoring financial products for these purposes.

Recommendations for action are presented on the next steps perceived in order to progress more informed discussions with stakeholders and to refine the process for generating policy options.

1 INTRODUCTION AND BACKGROUND

The aim of **Household Greenhouse Action** is to bring together key stakeholders to develop integrated and effective strategies to reduce residential greenhouse emissions. Given the potential benefits to householders and the environment of more efficient use of energy, the potential role of financial products in reducing residential greenhouse emissions is potentially a significant mechanism. The directions of this study are in line with trends observed elsewhere towards preference towards voluntary market-mediated measures and financing, rather than grants, rebates or direct subsidy and market intervention.

This report, commissioned by the Australian Greenhouse Office, identifies and assesses the role of financial products in assisting to reduce greenhouse gas emissions from the residential sector.

The goals for the project have been to

- identify and assess attitudes within the Australian finance sector to prospective financial products for the residential sector; outline and document existing Australian and overseas models or programs; and research and assess the attitudes and roles of key residential sector players
- develop options for financial products to assist households reduce greenhouse gas emissions

This report documents the findings of the research and outlines options for the development of products.

Residential Greenhouse Emissions and Fossil Energy Efficiency

We take residential greenhouse emissions to be the **emissions directly or indirectly attributable to energy use within the household**. Thus household electricity consumption, although not directly causing emissions in the household, nevertheless can be a major source of emissions through fossil fuelled power stations.

In the light of discussion with the Greenhouse Office, the research does not address householders **transport energy** consumption. In particular, efficiency issues relating to the domestic re-charging or refuelling of electric or CNG vehicles from domestic reticulation will not be addressed in this work, although it may be a fruitful area for research in other studies.

The report deals with issues which relate to **carbon dioxide (CO₂) emissions** arising from static energy use within the household. Emissions other than CO₂ are not considered in this report, nor will possible carbon sink activities at the household level, which might possibly be relevant for some rural households.

The focus on financial products implies consideration, for the purposes of this study, of **existing, proven, commercially available technology** for reducing fossil energy consumption. We will

focus upon the potential role of existing or new financial products designed for normal application in consumer/household situations.

We will in this study not principally discuss product development finance, R&D finance or finance for demonstration programs; nor address in detail seed risk finance for entrepreneurs initiating a new commercial product based upon new technology. Issues relating to finance for establishing new products in the market are indeed vital, however the issues involve different considerations. It is also noted that product commercialisation finance is the subject of two other programs in the Prime Minister's Greenhouse Package (ref), namely:-

- Renewable energy technology investment fund to facilitate commercialisation (2:1 funding)
- Renewable energy technology commercialisation loans and grants (strategically important initiatives that have strong commercialisation potential)

We will in this study focus principally upon the specific issue of **finance as a catalyst (or barrier) to the take-up of proven, commercially available products, services and technology** now in the marketplace for the household sector.

What kinds of measures are involved in improving residential energy efficiency and reducing greenhouse emissions? No attempt is made here to provide an exhaustive list, but the following are widely recognised as economic and available in the marketplace.

- more energy-efficient new home design and construction
- retro-fitting to existing residential buildings, particularly including increased ceiling insulation, weather-stripping, and double-glazing
- minor adjustment to existing equipment operation particularly hot water flow regulators, high efficiency lighting etc
- high efficiency hot water systems, including solar hot water systems
- high-efficiency space heating, ventilation and cooling (HVAC) systems
- purchase and use of high-efficiency appliances

In general, though they have different life-cycles and intensities of investment, the above measures fall into the category of increased fossil fuel efficiency in household consumption of energy and are widely available to consumers. We will refer to these measures in this report as the market for fossil energy efficiency.

In principle, **household energy production**, such as photovoltaic electricity, wind-power or other renewable forms of energy production for own use or sale, would not be ruled out - but these can be rather special cases and should not dominate the issue. In some of these cases special factors such as remote or semi-rural location are central to the technology and economics. Buy-back pricing issues are also important. Whether financing itself is the main issue, or rather, the proper market conditions for the technology, is more problematic in these cases.

Research Methodology

In reviewing and documenting the information available we have drawn upon

- desk research based upon our own knowledge base and extensive search of InterNet resources and library sources
- advice and materials provided by AGO and other departments
- telephone discussions with key players and materials they provide
- face to face discussions with selected players and stakeholders

In the time allocated (3 weeks) for the research, broad and generic issues have been identified, rather than detailed analysis of existing programs or detailed proposals for new programs. Where detailed information is available, implications at a general level have been sought.

In nearly all consultations contact was made by telephone initially during which an offer to send by facsimile an outline of the issues on which views would be canvassed. A copy of this letter is included as Appendix 6.1. Appendix 6.2 lists the organisations contacted in the course of the study. Discussions were held with individuals from organisations on the basis that individual views would not be attributed. One reason for this is that on the specific issue of energy efficiency finance no official organisational views have yet been considered.

A full list of references and resource materials is also given in Appendix 6.4, whilst a special collection of agreements supporting the Energy Star Finance partnership and related material is provided at Appendix 6.5.

Remaining Chapters of this Report

In Chapter 2 we discuss financial sector attitudes to products for energy efficiency. We first outline typical current and potential financial products and their role, and then present the results of research and consultation.

In Chapter 3 perspectives of other key stakeholders are explored and reviewed. We draw upon this research to indicate approaches likely to attract the interest of all major stakeholders and also indicate potential conflict issues that need to be managed.

The role of financial intermediation in promoting fossil energy efficiency for the residential sector is reviewed in Chapter 4. We consider the market conditions that are necessary to make fossil energy efficiency an attractive investment for financial institutions. We outline several models and programs from Australian and overseas experience in the area of finance for energy efficiency.

In Chapter 5 we discuss financial products that are most likely to be applicable to the residential sector. Broad options and areas for action are discussed and assessed. General findings and

conclusions are also presented in this chapter together with recommendations for further detailed work which would be required to develop financial products for the household sector.

2 FINANCIAL SECTOR ATTITUDES TO PRODUCTS FOR ENERGY EFFICIENCY

In this Chapter we outline typical current and potential financial products and their role, and outline financial sector attitudes to products for energy efficiency resulting from research and consultation.

Typical current financial products

2.1 Major Consumer Finance Products

The major financial products available to consumers in relation to household energy use are:

Mortgage finance - typically long term and associated with decision to buy the family home; purchase of the home, whether an existing or a new home includes long term commitments to energy performance of the design, in the absence of further improvements.

Secured finance can also be applied in cases where there is relatively high equity in the property for any worthwhile purchase, which could include renovation and replacement of major equipment such as water heating systems. Because of its long-term nature, small margins in interest rates or fees can result in significant differences in finance payments by customers. Secured finance is available at a lower rate than unsecured credit because of the lower risk of loss on the part of the lender, owing to the security held by the finance institution against outstanding debt. Default rates upon the most prized asset of Australians ("a home of our own") are probably lower than default rates on relative luxuries (eg a second car).

Because of the fees and costs of setting up and registering the mortgage, mortgages are generally rarely initiated for sums of less than \$20,000 and are frequently issued for very high proportions of the value of the property. The average amount approved for a mortgage is \$104,000. Annual Housing Loan approvals in Australia run at about 90,000 for new homes and 400,000 for established homes, including re-financing of existing homes at about 110,000 of the established homes. Bank lending comprises about 80% of all lending for housing. (Reserve Bank Loan approval data 96/97)

Personal finance products have proliferated in the last two decades, when **bank personal loan** applications were the main avenues for credit, apart from specialised **consumer credit underwriters**, which were often bank subsidiaries. These sources of credit involve some significant transaction costs in relation to the need for specific application and approval processes for each major purchase requiring finance. In some cases (hire purchase agreements) the lender held an interest in the asset financed (eg a vehicle or major appliance) until the debt was paid, but in other cases, eg personal bank loan, credit was advanced against the income, general assets and standing or performance of the lender. Interest rates for bank personal loans or consumer credit underwriters were significantly higher than mortgage rates, principally because of the higher risk of default and lower access to value in the case of default.

Nowadays **credit cards** are available from all retail bankers, and householders frequently have access to two or more cards, and combined credit limits for many households could range from \$1000 to \$20000 and higher. The benefit of credit cards for consumers is that there is a once-only inconvenience of making application, and that once issued the cards can be used for any purpose over a very wide range of goods or services. In this respect they are almost equivalent to cash in terms of consumer convenience at time of purchase. There is no obligation to use the credit, once approved, and no obligation to use any particular store or service provider. The costs of finance are borne by the store, which receives payment for merchandise and services sold in return for a fee (in the vicinity of 2% to 5% but variable), whilst the customer pays the credit card provider immediately or on instalments as desired. The cost of credit to the consumer is significantly greater than mortgage rates and is related to the default rate on the card.

In addition to bank sponsored credit cards, there is a large and increasing array of credit cards offered by major stores and non-bank credit providers such as Diners Club, GM Acceptance Corporation, and others. Some of these cards provide more restricted opportunities for use (eg only within store chain). Many of these cards will be valid for goods but cash advances are not permitted. In return many of such cards are also associated with loyalty programs with airlines etc.

It is probable most appliance purchases, and most hardware and heating systems purchases and even small household renovation are within reach of the average credit availability of many households. The average cash advance on a credit card is \$215, and the average purchase financed is \$95. There are nearly 8 million bank issued credit card accounts, with total outstanding limits of \$30 billion (average credit limit of \$3750). The actual debt amount outstanding is \$9.3 billion, representing an average used of \$1160. The **monthly cash advance and purchase transaction** level is about \$3 billion. (RBA 1998)

Vendor finance is frequently arranged, by major household water or space heating systems providers, or agents, with consumer credit underwriters. Sometimes major credit providers maintain pre-approved credit limits for regular consumers eg AGC's Creditline which has 800,000 customers, but vendors may offer finance on each specific transaction subject to credit application and approval. There are many providers of such credit services, including insurance companies, motoring organisations, as well as more traditional non-bank credit providers. Vendors pay a fee to the credit provider for the service, and consumers make repayment to the credit company. The pricing of the appliance or household energy system financed in this way includes the fee paid by the vendor, and in the most competitive markets, cash settlement can induce vendors to reduce prices from published or list prices.

The Energy Card has been an example of vendor finance arranged through a credit underwriter for a range of energy efficient and renewable hot water systems. It is discussed further in Chapter 4.

Other Types of Financial products for Residential energy efficiency

Utility based finance programs have historically been based upon the provision of credit for purchase of appliances, insulation, major heating equipment etc to householders from the utility's own funds, with repayments frequently on the energy bill. The period of credit in many cases

was restricted to 6 months, and at the time this was probably competitive. Frequently nowadays utilities that continue sales of appliances finance them externally, for 90 days or six months interest free. Further discussion of utility programs is contained below

Leasing finance involves the provision of finance where the ownership of the asset financed does not pass to the owner until completion of the lease. Leasing finance has been used for a wide range of innovative financing, particularly for transport systems, but also for energy efficiency upgrades particularly in the industrial and commercial sector.

However leasing has been used to finance programs aggregated over many householders in the residential sector, say for example in large scale light fitting upgrades to large sections of housing in some former communist block countries. Leasing is suited to situations where some physical asset forms the greater bulk of the expenditure rather than labour services, and where continued use of the asset may be denied the ultimate owner in the event of default. The transaction costs involved in leasing on a small scale would be relatively high, compared with consumer credit, and there would be greater risk for the lender, and cost for the borrower, in projects with a low component of physical assets.

Some aspects of Public Housing energy efficiency might be appropriately financed in this manner, although the problem of ensuring "user pays" may create other difficulties for the financing in the case of rental accommodation. It could be difficult for the building owner to capture energy consumption savings, unless through rent rises, in cases where flats are individually metered; in cases (overseas) where public rental apartments are not individually metered, housing owners are in a position to directly capture the savings in electricity from a lightbulb enhancement program, and so service the finance charges for the retro-fit.

Performance contracting is a form of arrangement wherein a service provider takes liability for energy bills, on behalf of an installation or premises, and is free to gain savings through investment and improvement in operating practices. The owner is spared the cost of undertaking and managing the energy efficiency gains, but receives a share of the gains, either by sharing in the savings with the contractor, or resuming responsibility for energy cost at a lower level after an agreed period. There are significant uncertainties in the arrangement, which mean negotiation effort and cost for the contract is substantial, and not worth attempting unless the project is at least \$200,000 or even \$500,000 in size. This would imply performance contracting could have a limited role in the residential sector.

The Dynamics of Lending

The general volume of lending and level of interest rates will depend upon the demand and supply of money according to macro-economic conditions in the economy, which will vary from time to time. However the factors which individual lending institutions take into account when offering loans are useful to consider.

The motive to lend is to earn a return (interest) upon financial capital by advancing it to a borrower, under conditions which ensure the return of the capital at, or by, the end of the loan.

Lenders require the return of their capital. More or less certain return of capital can be contracted by lending to Government, or banks subjected to government guarantee for depositors. Lending money to government or similar bodies is associated with near-zero risk of loss of capital, but it provides the lowest returns. Lending money to individuals and firms carries a more significant risk and therefore lenders will require a higher rate of interest, and possibly other collateral security in order to provide the loan.

Lenders require evidence of borrower's income capacity to service the loan (ie make regular payments of interest and capital) and may take a charge over the assets of the borrower, to insure against any loss if the borrower defaults (through forced possession and sale). Lending on an unsecured basis involves greater risk of loss than on a secured basis, and lenders will require a higher interest rate.

Lenders attempt to maintain the **quality of their lending portfolio** through selecting, or qualifying, borrowers in order to reduce the risk of default. They apply criteria which assess the disposable income of the borrower relative to debt servicing, general and specific assets of the borrower, and other factors such as past history of borrowing.

Lenders will have incentives to maximise the interest charged to lenders, but be constrained by the opportunity available to borrowers to seek loans from other sources, ie competition between lenders.

Competition between lenders will also tend to expand the amount of credit offered in the economy, subject however to lenders exposing themselves to higher risk of loss (through default). As lenders offer more loans, it is likely that they will risk lowering the quality of their portfolios, if they lend on the same terms to borrowers of lower income or assets.

Motivations which would affect finance companies perceptions of a market, or market sector include

- profit and efficiency considerations (particularly maintaining the risk-return margins of established existing business, and reducing the cost of administering credit; greater differentiation can bring greater risk exposure and higher cost of loan set-up)
- market share (maybe lenders will look to lend in growth markets, subject to adequate security; greater volume of lending tends to lower the effect of fixed costs, such as branch and advertising overheads per loan)
- corporate citizenship in its own right (awareness of environmental concerns raised by customers); also corporate citizenship may lead indirectly to greater market share if it attracts greater positive awareness of the firm.

Banks and other financial institutions will be expected to be interested in energy efficiency if it is demonstrated that lending for purposes of energy efficiency will have acceptable risks and returns, and manageable transactions costs.

Research and consultation with the Finance Sector

In the course of the study discussion were conducted with:

- Major retail bankers (typically providing secured mortgage, personal loan and credit card products)
- Other bank and non-bank suppliers of retail credit (typically also providing mortgage finance, unsecured personal loans and underwriters of sales to manufacturers or retailers)
- Investment bankers (typically providing debt and equity funds to business)
- Australian Bankers Association

The peak body, the ABA, did not wish to express any view, preferring to see this issue as one for individual members to take their own decisions about.

One general perception from discussions is that presently banks do not automatically perceive energy efficiency area as a fruitful business area. This is more due to being unaware of potential products and opportunities than having formed adverse views as a result of study or past experience.

Representatives agreed with the proposition that they would be interested in any business area if it had an acceptable return for the risk involved.

In the course of consultation the author was advised by one state energy agency that they had extensive discussions with banks, several years ago, on energy efficient mortgages, and their experience, at that time, had been that the major banks were not interested in discussion, but the smaller banks had been more interested in the idea. Nevertheless, even these banks, which were keener to enter discussions, had not taken up the idea.

In discussion with others working in energy efficiency, the author found confirmation that Australian financiers know little of energy efficient mortgages, and that there was cultural resistance to rethinking their formulas and ratios. The issue of what happens if a house is sold before the maturity of the loan was said to be a particular problem.

This author sees no reason to think financiers lack innovation and flexibility. However they are in a competitive market where financiers who reduce the quality of their loan portfolio without increased pricing can wreak great losses upon themselves and their shareholders. The critical issue is whether it can be demonstrated that there are sound empirically justified reasons for specifying an energy efficiency financial product differently and retain the quality of the loan portfolio, because it is in these terms that financiers must appraise their business opportunities.

Some comments received indicated that to move into such an area, a financial institution would put a project team onto it to do some research etc, and clearly most banks have not done recent research into possible financial products for energy efficiency.

The concept of finance for energy efficiency appeared worth looking at for at least two financial institutions approached.

However the standpoint which would be likely to accompany such an examination would include issues such as

- what would be the customer value that would be created
- what incentives would government provide to expand lending for energy efficiency
- lenders would not vary their prudential or other margins for energy efficiency lending without some incentive from government or without very firm evidence to indicate the rationale and benefit to themselves or customers of modifying current products
- lenders would seek some government input to promote finance for energy efficiency purposes (one issue raised in a loose way was the possibility of tax **deductibility of interest** for energy efficiency mortgages - residential mortgage interest is tax deductible in the USA and other countries)
- some private lenders may be wary of close association with government for several reasons (uncertainty of continuity of the partnership program if the government changes; also, some potential resistance to association with any program underpinned with regulation as its basis. If this aspect is seen as predominant there will be an unwillingness to be seen as a partner to, or beneficiary of, decisions which force up the cost of new homes by significant amounts via minimum energy ratings)
- in the case of secured finance, the financial products should not be limited just to new home buildings but should include refurbishment and reverse-equity products (which could re-equip with high efficiency major appliances)

Another factor mentioned, in relation to promotion of energy-efficient housing finance, was the role of government related finance organisations underpinning energy efficient finance structures through the secondary mortgage markets. This role would be absent in Australia, but present in the USA, where the secondary market provides, effectively, risk insurance for primary lenders in relation to the differentiated products offered to consumers.

A major provider of unsecured consumer finance (principally serving major retro-fits and appliances) indicated interest in exploring ideas and options further. Again, similar broad issues as mentioned previously were raised and, in addition, the need not to be too restrictive in the range of items which might be financed

If financial institutions become convinced that there is a market, they may be willing to devote resources to understanding it and to developing specific financial structures to accommodate the market. Conversely, if their perceptions are that the market is too small or unprofitable, they will only proceed, if at all, subject to additional incentives or inducements.

The community and business perceptions surrounding the need to use energy more efficiently may have decisively altered following the Kyoto protocol and the issue may receive more careful attention.

One major bank indicated they were reviewing their environmental policies, and whether to join the Greenhouse Challenge.

Westpac is reported to have signed the “UNEP Statement by Banks on Sustainable Development” which sets out environmental principles for banks to follow. (Environment Australia)

A general issue, which might affect the participation of individual firms, relates to whether the AGO would seek to develop generic programs, or to develop specific programs, in partnership. Some private sector firms would be reluctant to put too many resources into an exploration with government; if it turned into a generic program their competitors would join also (having put less work than they did). However, it may not be possible for a government body to develop collaborative programs involving spending of government money without some prior process of open competitive tender. Developing non-generic programs which are not open to others at any stage can create opponents and critics for the program at the outset (possibly generating "picking winners" perception also).

AGO would need to work with banks and other lending firms to derive acceptable guidelines, which it is likely would find sufficient acceptance, for several financial organisations to ally themselves and develop specific offerings.

3 OTHER KEY STAKEHOLDER ATTITUDES

In this Chapter the perspectives of other key stakeholders are explored and reviewed. We summarise the viewpoints draw upon this research to indicate approaches likely to attract the interest of all major stakeholders and also indicate potential conflict issues that need to be managed.

3.1 Energy Consumers

Introduction

The most obvious motivation for an end-user to invest in energy-efficiency is to reduce spending on fuel or energy. If an energy efficiency investment is properly financed, it should generally generate immediate positive cashflow for the consumer.

Theoretically, if the economic rate of return on an investment is greater than the cost of capital, the investment should be undertaken.

For example, consider two refrigerators of equal capacity, one costing \$800 to buy but having an energy operating cost of \$60 per year to run, the other costing \$900 but having annual running costs of only \$45.

The consumer here has **an investment choice**

- buy the cheaper fridge OR
- invest an extra \$100 in the high efficiency fridge and save an annual \$15 in running costs.

The rate of return on the high efficiency fridge is about 15% pa. In theory then, provided the cost of borrowing is less than 15%, (say at 12% pa) the consumer is better off borrowing the extra \$100. The value of the operating cost savings gives a higher return than the cost of borrowing the extra up front cost.

To demonstrate the point another way, consumers should expect a **positive cash flow** from buying the more efficient fridge, because the combined ownership and energy costs will be lower. In the case just presented the household will have annual savings of \$15 per year but higher interest costs of \$12 per year (interest cost at 12% on the higher up-front cost), meaning a **net cashflow saving of \$3 per year**.

There are reasons why this logic does not always apply:

- low awareness of energy efficiency options (possibly due also to incentives for salespeople to close sales quickly)
- limited access to energy efficiency products and services (the customers major appliance store doesn't stock high efficiency products)

- lack of information on energy efficiency options, costs and benefits (better manufacturer information, aided by labelling programs generally, and especially at point of purchase can redress this issue; however consumers may have no information about operating costs of existing second hand appliances or housing at all)
- lack of skills and knowledge to properly evaluate higher capital costs of energy efficiency services or products against the operating benefits. (many consumers are not accustomed to be able to discern rates of return and paybacks involved in comparing different purchasing options even if they had all the information to hand; some consumers compartmentalise different decisions in order to deal with them in a simpler way. Today's problem, for example is to get a fridge immediately to preserve or save the value of the weekend refrigerated food stocks - possible value \$100 alone)
- the analysis presumes that the trade-off between purchase cost and operating cost is the most relevant factor in the purchase. Consumers may be well informed and have the skills to compare present with future cost amongst options, but may prefer to **give much more weight to other factors** such as brand name, style, local or overseas manufacture, etc. (See box: How concerned are Buyers with energy Efficiency). In many cases however consumers are not aware of the operating costs to the same extent as other features with which the home or appliance is marketed
- consumers' **access to capital** is sometimes very tightly constrained. The situation may be one where the old fridge has just broken, and though a replacement fridge is essential, the only repayments on the fridge that can be afforded demand the lowest capital cost option be purchased. The most relevant constraint on the refrigerator purchase might well be the current BankCard limit, which might dictate that the cheaper model has to be purchased, even though the consumer might be aware of the net benefits of buying the dearer, more efficient model. In an extreme case, perhaps the household has **very limited access to capital**, and can **only afford to get a 15 year old second-hand fridge costing \$200 with completely unknown operating cost, future life and no warranty**. Consumers make sequential decisions subject to different constraints at the time. The process of applying for, granting and paying the loan back is separate, institutionally and in time, from the process of paying energy bills. There may be no automatic way the net benefits of lower total ownership and operating costs can be parcelled together.
- another related factor, even where consumers do have the skills to discriminate between choices involving energy efficiency and different costs, may be that **the value of the transaction might not be big enough to warrant the additional bother** of doing the comparisons. They have lost the energy efficiency guide for air-conditioners and will have to take time to find it or get another one. Consumers do not spend time and travelling costs searching for better deals, unless the size of the transaction is sufficiently large that consumers perceive they are likely to get a reasonable benefit from their effort.

How concerned are buyers with energy efficiency?

When new-home buyers in the Washington area were asked in a National Association of Home Builders survey taken last year, "Would you pay less than \$1,000 in the purchase of your next house to save \$1,000 every year in utility costs?" only about one-third said yes.

Of those expecting to buy the most expensive houses (\$250,000 and up), even fewer were willing to spend extra on energy efficiency.

NAHB economist Gopal Aluwalia, who has followed U.S. housing trends for more than 20 years, said such a response was not surprising.

"Most of the people who buy new houses are most concerned with space and amenities instead of things that are in the long run beneficial but cannot be seen," he said. "They want their friends and relatives to say, 'Wow! You have a Jacuzzi, two fireplaces and a huge kitchen!'"

"Consumers are concerned with looks and take for granted houses are energy efficient. Will they pour more money into energy efficiency? Absolutely not.

"Consumers will buy Energy Star Homes if they meet other requirements," Aluwalia said. "They will not give up nine- or 10-foot ceilings, they still want a fireplace, two-story foyers, more windows, more glass and more openness. All these features consume energy, but across all price ranges consumers are concerned with features and amenities they consider part of their lifestyles."

Source: Extracted from Salant, 1997

Different dynamics of energy efficiency household choices

Householders have been tending for a long time to own and use more appliances. The growing development of two income households has meant a greater need for, and capacity to buy, labour-saving appliances and recreational equipment. Lower home occupancy in the early stages of partnership and marriage may have reduced the immediate concern about high water and space heating running costs which are present in many of today's fashionable housing designs. However the high running costs of the household will begin to be more apparent once children appear, and the home has much higher occupancy during the day and evenings.

Consumers rarely directly make advance decision about buying different quantities of energy (Coin in the slot meters is one example of such direct purchase). The decision about energy purchases appears indirectly, as a consequence of decisions about the use of existing services,

and choices implicit in new housing, improvements to housing, hot water systems, heating and air conditioning systems or major appliance purchases or replacements.

- There are different dynamics in first home buying decision, versus second or third home purchase. Key stakeholders such as builders and banks are aware that first time buyers, in particular, are sailing very close to the financial line to get a house. They have little or no resources left over for added energy savings or for any extras such as reasonable quality curtaining to reduce energy heating cost.
- Decisions about insulation, hot water, home heating and cooking are different from most other appliances; such improvements and systems become fixtures and part of the home asset.
- Other major appliances are not fixed, and may shift with change in residence (may also provide some realisable value for the consumer or for the lender in the case of default)
- Some appliances nevertheless provide essential services, for example refrigerator and washing machine and all households are compelled to have them irrespective of their energy efficiency

Research and Consultation

Views of representatives of consumers and those who deal face-to-face with consumers were canvassed through contact with

Australian Consumer Association

Environmental and Energy advisory centres, particularly providing advice upon residential design, retro-fitting, and appliance choice and usage

Consumers viewpoints

It should be noted that customer service issues for utilities, particularly disconnections and disputes over meter readings, are reasonably frequently raised by consumers, and referred to consumer protection agencies or ombudsman offices.

Petrol outlets are also the subject of consumer complaint, mostly over pricing, but sometimes relating to weights and measures issues, though to a much lesser degree than electricity and gas utilities. The principal reason is that petrol is not sold to consumers on credit, and the consumer is aware of the outlay for the fuel required at the pump. On the other hand, reticulated energy is advanced on credit, and the consumer does not know what is his/her liability until 3 months after the consumption period commences.

In addition there will be a level of consumer complaint about finance and banking issues, and there is a banking Ombudsman to assist resolution of such matters.

In addition to the general issues raised for discussion in the consultation, further specific issues were canvassed with the Consumers Association. These included:

- credit experiences with "putting appliances on the gas bill" (or electricity bill, or local council rate bill - insulation)
- quality issues with actual vs claimed performance of items such as energy efficient appliances, insulation, solar hot water and/or pool heating systems, "energy efficient housing", "solar housing" etc
- any perceived benefits or adverse effects in possible growth of financial products supporting energy efficiency etc.
- views on consumer issues for particular consumer finance products eg the Energy Card
- any experiences with consumer mortgage issues tied to energy consumption or energy savings
- any comment, or experience, re accreditation of service providers for energy audits, or energy saving equipment, or energy efficient design or operation of housing
- any comment on experiences re energy efficiency of new homes built by developers

The Australian Consumers Association considered the issues raised, involving several departments and indicated they had no relevant data, past experience or cases on these issues. They did not have any viewpoint to express on the issues. They indicated they would keep these issues under review in future.

We can assume that quality, or customer value and service issues, for energy efficiency finance or energy service providers, is not a significant issue at present.

Summary of Consumer Viewpoints

There are a wide range of consumer attitudes and valuations regarding greenhouse issues and the promotion of energy efficiency.

- Some consumers are prepared to voluntarily pay more for electricity under the GreenPower scheme in NSW. Other consumers are prepared (at around the 1% response level) to round up their energy bills to finance solar heaters for schools and similar community buildings.
- However many other consumers are unaware of energy costs as a factor, either in social terms or when making their household choices.
- Many consumers are influenced by purchase cost, and also by fashion and to a limited extent by operating cost and energy efficiency.

There is an underlying interest in environmental issues especially amongst the young, and the ongoing future attention given to greenhouse gas emissions is likely to provide a heightened general background, which may present more opportunities for market transformation than in the past.

There are no discernible consumer attitudes adverse to energy efficiency services; from the point of view of developers of financial products, the field is an "open book".

Financial product options should recognise the different dynamics, demographics and market segments involved in different decisions with major impacts on household energy use

- first home buying
- second/third home buying
- renovations, upgrades and extensions to existing homes
- purchase of major energy-use appliances

We should expect that any development of specific products should receive some form of market research to guide detailed design and market promotion messages.

3.2 Appliance, insulation and Housing Providers.

Views were canvassed through contact with

- Appliance manufacturers
- Insulation manufacturers
- Master Builders Association (Residential builders)
- Housing Industry Association
- Solar water heating suppliers
- Woodfuel stove merchants (no response)

Building Industry

The author made visits to wide range of builder's display homes in Melbourne. In rare cases was there any mention of energy performance; in all but one case no rating was available for the home on display, and in all but this one case the builders representatives knew very little about the rating system.

None of the extensive glossy brochures mentioned energy issues for the home designs advertised- though one billboard outside one home stated the builder had won an energy award.

There appears to be general agreement amongst all consulted with the proposition that initial capital price was the absolute criterion especially for first time buyers, who were prepared to run themselves extremely thin to get a home. Often they could not afford any quality curtaining or any curtaining at all.

To the extent that builders are aware, from professional knowledge, of the advantages of energy efficiency improvements, but are subject to strong pressures to reduce construction costs, one observer perceived builders as "between a rock and a hard place." Their position may be that they'd like to offer energy efficiency but it just doesn't "sell". Two persons associated with the building industry independently were aware of the ACF Green house project and its mixed reception.

There are hopes expressed that rating and labelling will enable some to lift their game, and try to offer a higher rated home than the minimum set as a target.

On the subject of the finance issue, one discussant indicated that builders would be less likely to be concerned with how the finance of the extra energy efficiency upgrades, but other issues such as how they would tackle the job in a different way. However this author believes such attitudes may be more prevalent amongst the second and third time market and the renovation builders, rather than the project builders catering to the first-time buyer. Builders operating in the first-time buyers market would be likely to be worried that the additional cost might push their product out of reach of the customer, given the competition.

Regarding finance for building, it appeared that the market does have segments which were not explored in detail in this study.

There is a substantial segment dominated by **large scale developers and project builders**, and in which the customer had very little discretion over options available. Land and building orientation are clearly restricted to whatever the developer provides. There tended to be more packaging including some fitted kitchen appliance arrangements in this segment, and some may be financed preferentially through the developer.

For example Pioneer Homes are currently offering house and land packages in Melbourne "from \$99,000". The package is targeted at average income earners who are currently renting to become first home buyers. Mrs Hazel Hawke prominently features in the promotional material. The builder/developer pays for the deposit, legal fees and stamp duty, and the package includes gas hot water system, gas hot-plates, electric oven, and gas ducted heating. The package is cast to attract buyers to compare with their current rental arrangements, with emphasis upon no bulky upfront cash requirements, and attention to the weekly repayment "from \$159 per week". Finance is provided through Australia First (a Queensland finance company) at an interest rate that is fixed for 16 months then variable. Because of the packaging, especially with inclusion of significant energy using equipment, there may be scope for development of energy efficient financing techniques. However lender developers will need to be convinced that there will be significant reductions in energy bills as a result of the differentiated package in order to accept higher loan amounts for any given applicant.

Builders providing housing **upon the buyer's own land** could offer **more individuated service**. Another substantial segment provides new homes on buyers land with basic branded designs. Options for change are available at limited or no cost. Builders will have standard appliance or heating selections included in the basic price, and on occasions may offer additional equipment such as a dishwasher or carpeting included during special promotions. **Finance is generally open to the customer** to arrange, although some builders may mention a finance company if asked.

The **building renovation** segment offered the most scope for individual options incorporating energy efficiency equipment. Additionally the home owners had more significant equity and were often less constrained by financial ratios maintained by lenders.

There is **potential synergy** in principle possible between promotion of the rating and labelling schemes and the provision of financial products in support. Cooperation might be threatened if major building interests blocked major aspects of performance standards.

One factor worth noting but not investigated in this study is the **potential risk of financial products being developed by relatively new entrants** to the building finance sector. To the extent that some builders have long established relationships and networks with established housing finance providers (especially provincial builders) there may be less synergy in any AGO sponsored initiatives between builder partners and financier partners. Developing financial products with players that have a presence in the building industry will be an advantage; however it may pose a dilemma if existing players are reluctant to promote energy efficiency finance, and the "hungrier" newer entrants are the ones to promote new financial products.

The extent of implicit or explicit financial arrangements between builders and financiers in Australia has not been studied, but there may be reasons for it to be less of an issue than in the USA. The USA has 50 states, and until recently it was illegal for out-of-state banks to offer mortgage products. Energy Star Homes have been growing fast in the US but Energy Star mortgages (comprising national level Partner financiers) have not flourished to date owing to the dominance of local financial institutions and local builder-financier relations in the US primary home mortgage market. Nevertheless, in Australia, the state and provincial based savings banks and building societies (including their successors) will have some predominance in some local markets, despite all the national majors having some market share.

Peak Bodies such as HIA and MBA

The HIA are just preparing their environmental policy, and it won't be finalised until after their Annual conference. They believe it will be clearer what the HIA policy is by the end of May. There is no current policy of the HIA.

Peak builders bodies are trying to encourage energy efficiency, through awards for energy efficient design and construction. Building Industry awards for residences have had mixed fortunes in some states. One State association dropped the energy efficient home category 2 years ago and another association award attracted no entries in their energy category last year. The same year the National award had 12 entries. Reasons for this variability included the stated lack of many new homes on any scale; lots of renovation activity was reported but the rate of new home development was not strong.

The industry tends to present overall efficiency as depending upon the **preferences and behaviour of consumers** as a greater issue than the home energy rating and the implications the rating has for modified building practices. Builders might present the big dilemma as how to modify consumer behaviour (implicitly builders behaviour not seen as a problem).

The building industry is highly competitive (very large number of firms) and individual firms are generally much less capable of modifying market outcomes than in more concentrated industries, such as motor vehicles. In smaller cities and towns, some local market dominance might be expected however.

Building Industry Summary Viewpoint

Informally, builders accept that the industry is seen as not having a good record on energy efficiency. There is a possible perception that the industry is at risk of punitive regulation if it doesn't lift its game.

The industry is likely to want to participate in consultations with any initiatives the government wishes to promote, simply to protect their position.

At a pragmatic level, the peak bodies are probably the ones with the greatest resources available for consultation, representing and servicing the small to medium sized builders who have no "corporate support" systems of their own. Only the very largest developer builders would have the resources, to respond to or consider proposals, or attend working parties or similar. Some of these might participate formally in financial product option discussion, but competitive pressures may result in firms wishing to participate exclusively if they contribute resources to the product definition.

The industry at this stage **doesn't appear to regard the issue of finance for energy efficiency as a major pressing topic**. However the building industry is likely to favour the general proposition for new financial products that assist energy efficiency, as it serves to promote higher expenditures for builders and their sub-contractors.

Nevertheless, some builders may have an established network of relationships with local finance offices, and availability of more liberal financial products from other finance sources may not be perceived as outweighing benefits of established relationships.

The issue of **mandating minimum performance standards** for new housing is likely to be a **much more pressing issue for the building industry**, for example, although no direct discussions were broached in this area.

Approaches to developing financial initiatives should therefore

- include developers as well as builders
- ensure initiatives cover renovations and extensions as well as new homes
- include considerations of how new initiatives sit in relation to current partnerships, if any, between major elements of the building industry and the housing finance industry

Individuals and firms in industry are likely to be critical of government programs which "pick winners" in the sense of supporting one company at the expense of others, particularly if the arrangement flows from private negotiations and not open invitation. Such sentiments were not expressed by respondents in this study, but are noted from earlier consultations on market transformation issues as part of the response analysis of the Greenhouse Strategy.()

3.3 Energy Suppliers.

Consultations were held with:
several electricity and gas retailers
Australian Gas Association

Electricity Supply Association of Australia

The utility sector is undergoing profound changes and uncertainties at present.

Deregulation in the major Eastern States has altered many of the roles of utilities. In the past, (and some parts, still) Energy utilities

- had a reticulation and production monopoly
- provided 'Vertically Integrated services';
- enjoyed government guaranteed finances;
- responded to political pressures to cross-subsidise domestic consumers (voters)
- provided 'community service obligations' to fulfil social and economic support functions as part of a semi-public service

It is a time of great change and flux. Many of the old marketing practices built around an integrated service have changed in the deregulated States.

There are major differences in different states regarding the status and policies for energy distribution. These give rise to major differences in obligations of what utilities must offer regarding energy efficiency options. Obligations appear most noticeable for NSW electricity.

The changes will give rise to innovative service provision in the long term, however in the shorter term there are still many detailed issues about scope of services they will offer and major adjustment are occurring in response to their competitive environment.

- Some are preoccupied with internal reorganisation and change as the businesses are prepared for and restructured for privatisation
- Many are downsizing with major internal reorganisation in train
- Many are preoccupied with massive changes to customer information systems and accounting systems in a climate of recent amalgamation or separation, and imminent competition and contestability of key markets, and in response to strategic requirements of new owners.
- Many utilities have spent money on corporate publicity to maximise their new brand names; how much more they would spend on energy efficiency programs right now is uncertain; some are promoting renewables by organising finance **from** consumers eg NSW Greenpower;

In other business areas the deregulated energy retailers are pulling out of operations not central to their core expertise such as retailing appliances; some are pulling out of internal financing of residential customers on energy bills, others continuing it.

Some energy company affiliated appliance retailers are now moving to associate with a consumer credit provider, not supplying credit on own account. They recognise appliance or insulation business as very highly competitive.

GAS UTILITIES FORM COMPANY TO FINANCE RESIDENTIAL ENERGY-EFFICIENCY IMPROVEMENTS

(from the American gas assn web site www.aga.com)

In a unique effort to help homeowners reduce their energy bills, more than a dozen natural gas utilities have invested in a new company -- the American Gas Finance Co. -- that will use capital from FannieMae to make loans to consumers for energy-efficiency home improvements. Creation of the entity, also known as "GasFinCo," was authorised on Oct. 19 1996 by the American Gas Association's Board of Directors.

"This is a win-win for everyone. Consumers who want to use clean, efficient natural gas will find it easier to get credit to buy a natural gas furnace, water heater or other appliance and other money-saving improvements. Participating local natural gas utilities will have a time- and money-saving alternative to their own consumer loan programs that can also offer competitive rates," said Michael Baly, A.G.A. president and CEO. "The environment will benefit, too, because natural gas is the cleanest fossil fuel."

Owners of existing one- to four-family dwellings will be eligible for GasFinCo loans of up to \$15,000, and can take up to 10 years to repay the unsecured loan. In addition to financing installations of natural gas heating systems and water heaters, the loans could be used for kitchen remodelling that would accommodate new, more energy-efficient appliances, a homeowner's share of extending a gas main to the house or the cost of removing an oil tank when switching a heating system to natural gas.

Here's how it will work: A homeowner selects a contractor to install appliances or perform other work covered by a loan from GasFinCo. When the work is completed, the contractor is paid by the utility or by GasFinCo. The right to receive the customer's loan payments, including interest, is then transferred to GasFinCo. The utility can bill the customer directly, or let GasFinCo do so.

In most cases, GasFinCo will provide A.G.A. members with a lower-cost alternative to their own local consumer loan programs, which are often costly and time-consuming to administer. For example, A.G.A.'s market research found that it costs a gas utility \$515 per year, on average, to service a consumer loan. By consolidating the lending process, GasFinCo can drive the per-loan cost down to about \$75. This means that consumers will benefit by getting loans at competitive rates, while gas utilities save money on administrative overhead. With the additional savings, some gas utilities may have the flexibility to offer rebates on the purchase of gas equipment, free installation or other incentives.

There has been some past gas (and electricity) utility involvement in financing housing development of estates (eg all-electricity estates). One utility in fact was left with portfolio of land when developers defaulted; this utility "probably wouldn't get into financing housing again".

Utilities see themselves as now being compelled through government policy to compete to provide the lowest cost commodities to the customer. Their viewpoint:

- there are no resources for "altruism" within the cost structures of utilities
- whatever utilities would do under their competitive frameworks has to have tight business advantages related to overall efficiency.

Nevertheless, this author believes some utilities do perceive significant business opportunities in energy efficiency services because of competition. Now the competition for an energy distributor now is not only another energy distributor - it might be another energy service company operating in their area to reduce their market for supply of commodity.

Utilities Summary

Energy utilities support energy efficiency, and greater energy efficiency finance in principle. Although some are looking hard at expanding energy services to include provision and financing of upgraded energy efficiency equipment or appliances, it appears uncertain how widespread new initiatives or major commitment would be supported in their current climate of change. One industry observation was that many organisations were engaged in strategic positioning rather than direct action on greenhouse issues.

Deregulated energy retailers will still be potential avenues for partnership, because of their extensive coverage of residential households, and because of the marketing strengths inherent in their customer records and accounting systems. They are in a strong position to target programs, for example toward high energy consuming households by location if they choose, and can monitor the impacts on energy consumption of delivered trial or full programs based on addresses, if this was required as part of a program (subject to protection of private customer details).

Utilities could also be partners with finance companies in the development and implementation of financial products. Deregulated utilities are probably less likely to provide finance on their own account as they used to for general household efficiency products (demonstration or trial projects may be self financed).

Utilities would tend to focus upon finance for their own form of energy, in relation to space and water heating (including solar boosted), insulation, and appliance programs, rather than home purchase finance.

Utilities in principle support reliance on market mechanisms rather than command and control. They tend to be wary of any scheme that is bureaucratic in administration or not market focussed.

Utilities - the Potential for major Conflict areas

Potential conflict of interest between stakeholders is likely to arise between utilities

- residential energy issues are communicated by public mass media messages to a much greater extent than for industrial and commercial marketing
- **fuel substitution** will be a potentially sensitive PR issue, with gas retailers probably wanting strong government endorsement, through program qualification of switching to standard gas appliances from electricity. Some electricity representatives may be reluctant to participate if the PR messages appear partisan on fuel choice or not concerned with efficiency of end use. A focus on greenhouse emissions directly arising from fuel switch in the absence of efficiency considerations risks getting the program bogged down in fights over technical assumptions.

Another sensitive issue within the context of developing even generic products is the competitive position between utilities - residential customers become contestable in some

States after 2000. This author has encountered some resistance to even discussion on generic issues for fear it would disclose too much of their thinking. Working with AGO needs to be seen to offer some value to utilities in return.

The potential for conflict is ameliorated to some extent by these factors:

- the development of utilities with interests in both gas and electricity
- some joint interests in gas co-generation between the electricity and gas industry
- there was previously a long standing gas industry proposition that gas should not be used in power generation which the gas industry now seems to have retreated from; however the original argument is considerably resurrected if the gas industry only focuses on fuel source to end use efficiency

3.4 Local Government

Contacts: ALGA
Several individual local government officers
CCP Australia

Not too long ago many local government bodies had a statutory role in energy provision. That role is changing.

"Local Government has a major role to play in ensuring sustainable end use of energy through the planning of our towns and cities, community education, and most importantly, leading by example in their own activities which involve substantial energy use." (ALGA Submission on the Green Paper "Sustainable Energy Policy for Australia" , January 1997)

Many Local Governments throughout Australia promote energy efficiency to their communities. A number of councils have also implemented energy efficiency initiatives. These vary from financial incentives/rebates to policies for housing or councils own activities and assets.

They are generally keen to see inclusion of Local Government with any activities involving Federal and state government on sustainable development issues

The majority of Councils in Australia today are undertaking some action to improve the environment. Local Government could directly influence the activities and end uses of energy and thereby reducing national greenhouse gas emissions - collectively local responses have an enormous potential to reduce greenhouse gas emissions. (CCP promotion)

The **Cities for Climate Protection (CCP)** campaign aims to help Local Government reduce greenhouse gas emissions in their communities, through increasing energy efficiency, and by developing creative transportation management, building policies, waste management and land-use strategies. The campaign also seeks to improve local air quality and urban livability. The first pilot phase concentrates on recruiting 30 Australian cities.

To become a participant, councils must adopt a resolution which commits the council to achieving key milestones:

- * Conduct an energy and emissions inventory for the council and for the community
- * Forecast energy and emissions outcomes
- * Establish a emissions reduction target
- * Develop a local action plan - a public program on how you will meet those targets
- * Implement agreed policies and measures

Typically, a Council can take several years to achieve all five milestones. The campaign offers flexibility in the approaches taken to meet goals.

Environment Australia has made commitments to fund the development of the core materials and to provide the specialist training and assistance for participants.

Each Council will make a financial contribution of up to \$5000 (depending on their membership status with the organisations) toward the provision of materials, support and training. Councils will also need to allocate sufficient resources or staff time to carry out the five milestones.

Participants are provided with information, specific training and assistance to help conduct the emissions survey, and to achieve the goals of the local action plan at the highest benefit to Council.

Local Government Financing of Energy efficiency

A few examples of local government providing finance to its ratepayers for energy efficiency are noteworthy. A couple of councils (at least) have organised insulation **installation**.

Armidale provided local government insulation financed for up to 3 years on the rates by council. It has also extended the scheme to finance refurbishment of woodfuel heaters. The insulation program was also related to the making mandatory of insulation (the only council so far in NSW (excepting the ACT)

Another council which had run an "insulation rebate" campaign, had decided against running the payments scheme through their rate accounts, because of the costs involved. Finance in fact was not provided in this case. Indeed the rebate was basically the best trade discount price which turned out to be not much better than which could be had by looking around at the sales, but was better than standard small lot prices at smaller retailers.

One Local Government (Moreland) has a capital fund from the sale of electricity supply business. It is setting up about \$5.5 million into an Energy Trust Fund for a range of purposes, which might include

- funding for council's own activities
- loans and/or grants for activities undertaken by or for ratepayers within the local government area

It is not clear whether the capital is to be preserved, or spent over an extended period. However funds of this order could provide scope for some innovative activities.

A few councils may have relatively substantial funds which they might potentially apply to energy conservation or renewable energy purposes. These might possibly be encouraged to join with initiatives which AGO may launch; however the general impression gained, even where there was enthusiasm for energy conservation/renewables was

- an expectation of external net financing
- an expectation of grant or rebate funding

One potential area which may possibly be relevant is the provision of housing through local government bodies. Although not funding housing to the same extent as previously, scope may exist for the piloting of some energy efficient finance structures at a future stage. A possible example at the Olympic Village in Homebush was mentioned as a location. The main question for such possible projects is whether the accommodation is public rental or for private ownership, even if low income.

Local Government Summary

Local government presently is much more preoccupied with waste management, and tax reform. It is unlikely to give the specific issue of finance mechanisms to boost energy efficiency much time.

Local Government has a vital interest on its broader role regarding local planning schemes. And in order to implement energy efficient mortgages a system of rating and accredited raters, often linked in with local government, will be essential.

Local Government is not a key stakeholder in providing finance for energy efficiency investment.

However some individual opportunities could present themselves for Partnering on specific financial initiatives, piloting or demonstration but providing finance is not a likely major mechanism.

3.5 State/Territory government

Contacted: 3 State Territory Governments (various officers)

State and Territory governments will have significant secondary roles in energy efficiency financing. Some may initiate forms of energy efficiency finance, together with Partner or Ally agreements. Also the option may exist for participation in the delivery of any AGO initiatives.

- The rating and labelling schemes which are considered necessary for quantifying the performance of the investment will be set up with the co-operation (and legislative backing) of the States, and operated or managed within each State.

- State agencies are mounting partnership understandings in a wide range of areas which AGO may be considering, including possibly energy efficiency finance. Some existing

arrangements are similar to those under Greenhouse Challenge, but offer finance to participants

- Consideration will need to be given as to how any potential financial product service would have value added by decentralised participants apart from AGO. Apart from promotion in national media - where and how would distribution leaflets, signage etc be undertaken - where would local enquiries if any be accepted, and how would referrals to builders, developers, financiers work?

These are the kinds of activities that Partners may see value in - the promotion of their Partnership relationship at the decentralised "coalface". These services might be out-sourced privately, or located within State environmental and or energy information centres.

3.6 Lobby Group (ACF)

ACF is not a direct stakeholder but indicative views were canvassed. ACF have preferred traditionally mandatory programs, though have tended to accept more voluntary mechanisms within regulatory framework.

They tend to wish to see government intervention in markets, especially for reasons of externalities amelioration; connected with this view is a preference for carbon taxation, in part also to fund government initiatives and interventions. ACF have recently had policy personnel changes so any authoritative viewpoint is risky. Based on speculative reasoning, their support for voluntary mechanisms would probably be conditional upon fairly good uniform housing and appliance standards being mandated, and reasonable resources being committed to the program. However they may see voluntary programs as dependent on carbon taxation of some magnitude to speed up transformation.

4 POTENTIAL ROLE OF FINANCIAL INTERMEDIATION FOR HOUSEHOLD GREENHOUSE REDUCTIONS

4.1 Introduction

If all consumers had large cash reserves, there would be limited need for any financial products. However consumer incomes and liquid assets are limited in relation to the need for large purchases from time to time. Availability of finance provides a benefit to consumers. Consumers who would not conveniently be able to offer cash for large-ticket items can alternatively schedule payments including interest over time.

The **expansion of credit** is in the interests also of manufacturers and suppliers, who are able to sell significantly costly goods before consumers have yet saved up the price required. It serves the interests of credit providers whose profits are based upon the volume of lending and the margin they can obtain between their sources of finance and the rate obtainable from financing consumer purchases. Credit providers also have strong interest in volume, in order to create larger pools of lending to reduce aggregate risk, and to lower the average transaction and accounting systems cost per dollar lent.

Financing does not of itself really solve the problem for consumers who do not have sufficient wealth and income to afford the items they wish to buy. In these cases using credit mechanisms may make them worse off because they will have paid large interest costs in addition to penalties for defaulting on the repayments in the future. In many cases low income individuals have assessed that they cannot afford a big-ticket item at all, and do without. In a few cases consumers may act deceptively in the statement of income, and other liabilities, required to help lenders determine the viability of the credit arrangement.

However there are many who may incur unplanned reductions in income or increases in other costs; these may be related to change in family circumstances, illness, employment, etc. Default is unplanned in these cases, but the incidence of default will be likely to increase rapidly the larger a debt is in relation to average income, or conversely the lower down the income scale a given major appliance or system is marketed.

The expansion of Credit is therefore not unlimited, but becomes governed by the relation between marginal profit on the credit provision and increasing marginal cost of default and recovery, as debt is offered more widely across the demographic spectrum.

This margin is managed by most finance providers through prudential ratios of debt to disposable income and other similar scores including past performance for borrowers applying for credit.

In summary three points may be made

a) Under current financial market conditions with fierce competition between credit providers for market share and volume it seems unlikely that there is a significant shortage of consumer finance for those who qualify within the prudential guidelines operated by lenders. For many average to high income households, access to finance for worthwhile purposes including energy efficiency investment appears not a significant issue. There is no basis to presume that the

finance sector is lending less for energy efficiency investment than their current reasonable prudential guidelines would indicate relative to the level of consumer application for finance.

b) For the lower income households there may be only a very low level of debt which could realistically be financed by private sector lenders, because the income and collateral level of this group will be below the levels required for acceptable security for the loan. Some energy efficiency investment for low income households will probably continue to be financed by **government grant**, or **subsidy** on equity grounds. Improvements to public rental housing insulation and lighting are examples of such programs provided by government.

c) For a range of low to medium income households contemplating purchases which have embedded energy consumption and therefore greenhouse emissions implications, the marginal prudential limits operated by lending institutions will have greatest relevance and effect. It is at the margin of the prudential guidelines where we can investigate the potential for more efficient risk assessment, using business principles. Energy efficient lending might have the effect of widening the scope for lending for energy efficient investment relative to other lending to the same class of borrower. This raises the issue of differentiation in financial products for energy efficiency.

4.2 Energy Efficient Finance Concepts

The Idea of Energy Efficient Mortgages

Since it is not expected that the private financial sector should subsidise its customers, the issue of possible financial products for energy efficiency should be addressed in the context of the prudential ratios and pricing of the return and risk factors, together with reasonable transaction costs for such lending, relative to other lending purposes for similar borrowers.

A case may exist for differentiated terms (ie modified pricing structure and/or qualification for borrower) for lending for new housing and housing improvements on the following grounds:

- Space Heating and cooling and hot water costs are significant operating costs which would be reduced for energy efficient housing
- borrower's disposable income to service the debt is in fact greater, net of energy bills, for energy efficient housing than for standard housing, which would warrant some stretching of the standard debt to income prudential ratios for energy-efficient purposes; this stretching also permits finance for higher capital cost of energy efficiency features to be granted. The justification for the stretching lies in the assumed reduction in energy bills that would follow the investment. Benefits of energy efficiency are assumed to be taken predominantly as lower costs rather than higher comfort levels.
- the default rate for householders in energy-efficient housing should be lower, because the lower energy operating costs are highly significant relative to standard housing operating costs in the context of future events which lower income; for example a spell of unemployment, or illness is also associated with much higher home occupancy and heating costs, when one partner stops work to stay at home to rear children

- it is also argued that the loss on default, if it should occur, might be lower than in the case of standard housing because of the relatively higher resale value of an energy efficient home

Energy Efficient Financing for major appliances and heating systems

Mortgage financing for major renovation and efficiency upgrade, including solar heating systems may be appropriate. However, for incremental upgrade even to a water or space heating system unsecured finance is probably more likely.

Two key issues need to be addressed to advance the development of financial products for unsecured borrowing

- (1) whether the expenditure on energy involved in likely transactions for appliances and equipment is significant relative to income. A lending body might be prepared, if these circumstances were demonstrated, to alter its measures of net disposable income to service the debt, on the assumption of longer-term energy cost saving
- (2) whether the investment in energy efficiency in fact leads to lower energy bills or whether higher living standards are enjoyed for the same energy bills as previously.

Replacement vs New Demand

The question of stimulating new energy demand through promotion of energy efficient appliances is a potential issue for policy-makers in the context of desired reduction in greenhouse emissions.

If a household does not buy an energy efficient home, it will still have to use an alternative home, which may be its present home or a standard performance home.

However the purchase of some new appliances of a kind not previously owned, is likely to **add to energy use** and emissions. Replacement, not new demand, is likely to be the case for essential items such as hot water and cooking systems, and refrigerators, where an existing system is likely. However new high-efficient air conditioning equipment may represent a new energy demand. This author takes the view that an air-conditioner will be purchased because of extremely hot weather spell, and that this is the basic motivation irrespective of efficiency; thus although new demand is created, the demand is lower than otherwise would have occurred as people purchased new standard air-conditioners during a heat-wave.

Promotion of energy efficient appliances can therefore increase energy use relative to past usage where a new demand for energy has been created, although the increase is lower than if a standard appliance had been purchased. But it is reasonable to regard the purchase of the high-efficiency appliance as just as beneficial as replacement purchase to the goal of reducing emissions levels relative to acting as before.

AN INTRODUCTION TO ENERGY STAR MORTGAGES, EEMS, AND EIMS

Energy Star Mortgages

Primary lenders that have joined on to become ENERGY STAR Mortgage Partners can offer special ENERGY STAR Mortgages.

ENERGY STAR Mortgages provide unique terms available only to buyers of ENERGY STAR Homes. For example, these terms can involve discounts on closing costs, special debt-to-income ratio stretches, reduced rates, waivers for particular closing costs, or special underwriting allowances.

Mortgage Partners and EPA are working together to promote ENERGY STAR Mortgages to both builders and ENERGY STAR Homes purchasers.

Fannie Mae and Freddie Mac Energy Efficient Mortgages

Since the late 1970's, the secondary mortgage market has recognised that savings achieved through energy efficiency reduce monthly housing costs. Both Fannie Mae (FNMA) and Freddie Mac (FHLMC) have formally accounted for these savings in their underwriting guidelines by allowing underwriters to stretch both front-end and back-end debt-to-income ratios by 2 percentage points.

As an alternative to the 2% ratio stretch, Freddie Mac allows the lender to increase the borrowers' maximum monthly Principal, Interest, Tax and Insurance (PITI) payment by a dollar amount equal to the value of the expected energy savings of the home. Loans that allow for this stretch are called Energy Efficient Mortgages (EEMs).

All homes that are built to the Council of American Building Officials Model Energy Code (MEC) can qualify for an EEM. Since an ENERGY STAR Home is defined as 30% more energy efficient than a home built to the MEC, it exceeds the minimum requirements for EEMs and therefore automatically qualifies for the stretch. Primary lenders offer ENERGY STAR Home buyers the terms of the secondary market EEM coupled with the additional feature(s) they have chosen for their ENERGY STAR Mortgage.

FHA Loans for Energy Improvements to New and Existing Homes

The FHA recently expanded its Energy Efficiency Mortgage (EEM) pilot program to allow EEMs in all states. FHA EEMs allow lenders to include the additional cost of energy efficiency improvements in the mortgage loan. This FHA Program grew out of the need to provide appraisers with a mechanism to recognise the value of energy efficiency upgrades for both new and existing homes. Prior to the FHA Program, appraisers were unable-without comparable on energy-efficient homes in the surrounding neighbourhoods- to appraise the true value of an energy-efficient home.

To solve this problem, FHA allows appraisers to add an amount equal to the cost of the energy-efficient improvements-or the net present value of the energy savings, whichever is lower-to the value of the appraisal. This value (capped at \$ 8,000) is the greater of \$4,000 or 5% of the appraised value of the home and may be added to the mortgage. Like the Fannie Mae and Freddie Mac EEMs, this FHA product can be coupled with an ENERGY STAR Mortgage.

Fannie Mae and Freddie Mac Energy Improvement Loans

Fannie Mae and Freddie Mac Energy Improvement Mortgages (EIMs) are similar to the FHA loans, but are only available in selected areas of the country. Currently, the secondary mortgage market is conducting pilot EIM programs in Colorado, Vermont, Mississippi, Wisconsin, Alaska, Iowa, and Arkansas to evaluate EIMs for conforming loans.

4.3 Australian Models for Energy efficiency finance

Most forms of finance for energy efficiency have comprised free provision of services, or subsidies or rebates for the provision of energy efficiency. There are two main relevant models of energy efficiency finance (ie where the user pays for the energy efficiency) which have been employed in Australia. These are

- the use of utility financed appliance or heating systems or insulation, generally interest free for varying time periods, and paid off on the utility bill
- the use of subsidised finance plus promotional advertising for Solar Water Heaters and a restricted range of equipment (The Energy Card)

Energy Utility programs

Utilities have been involved in end-use energy efficiency services particularly in commercial and industrial energy, and traditionally not as much in the residential sector. Utilities have provided energy information services focussed on residential energy, often in conjunction with state governments.

Australian utilities have participated in many programs which are also promoted in the USA and other countries, including

- subsidised high efficiency lighting for residential customers
- rebates for winter energy bills (financed by government)
- home energy audits, and minor renovation improvements, targeted at low-income (Health Card holders, funded by government)
- offering customer finance for solar heaters, insulation, and high efficiency appliances (self funded, sometimes interest free for medium periods, and placed on the utility bill)
- energy efficiency advisory and information services

The ENERGY CARD

The ENERGY CARD was launched in 1995 to provide lower cost unsecured finance for solar hot water systems and other specified equipment or fuel substitutions.

The card's title appeared to offer an ongoing credit facility to persons - ie it seemed to be marketed as a facility that could be used more than once, ie it was not designed as a single transaction form of credit. However the narrow range of items that could be purchased on the card, and the fact that these were typically "once in 15 year" decisions made it unlikely that user would re-use the facility more than once.

The essence of the deal was that the government provided \$6m advertising focussed upon specific systems that were available for the card, plus 3.5% "transaction allowance" to the credit provider to finance the terms which were at the time lower than general unsecured interest rates on offer elsewhere. Supportive advertising by merchants and suppliers allied with the card added to the promotion, though it is unlikely anything close to the government advertising cost was incurred by partners.

The scheme has languished for about 6 months, largely as a result of the budget for the transaction subsidy being fully spent - ie demand for using the facility continued beyond the Government advertising campaign owing to logo material at merchant retail outlets and perhaps some customers still had their cards. Different state divisions of the scheme's operator have dealt differently with the scheme; Victoria has dropped it; some other states appear to continue with a modified form, but it appears to involve virtually the same conditions applying to the mainstream financial product offered. Inquiries to Energy advisory services asking about any special finance for solar heaters can be dealt with a reference to the Energy Card.

Responses to the scheme:

Merchants liked the scheme - the name of the card tended to promote the line of business they were in - eg insulation providers, solar hot water installers identified with the signage.

- Solar water heater people believe that the card did move sales along 5 or 10%,
- others recollect a large surge in air conditioners in Victoria
- there was \$22 million in sales over all products (principally insulation, solar water heaters and air conditioners).

The **finance operator** appears to like the scheme and claims that they would be interested in further energy efficiency finance.

This author met generally spontaneous adverse criticism of the card from most others asked:

- Transactions were said to be bureaucratic, at point of sale
- Negotiations for additional appliances to be added were bureaucratic and burdensome;
- limited outlets (eg 85 in the whole of Victoria)
- It is claimed that the scheme did not attract nearly the numbers of customers that were expected - but how many customers were expected? The budget for assisting transaction costs was in fact exceeded.
- the gas industry lobbied to get natural gas heating systems added to the energy card. However gas appliance manufacturers reportedly found the scheme very bureaucratic and involved high cost to participate in.
- Long times were involved to negotiate a contract with the credit provider managing the scheme.
- The level of interest rates was not flexible (allegedly) in the then scenario of falling interest rates and competitive conditions developing amongst other credit providers (rates remembered as sticky).

There are two different versions of how burdensome the point of sale paperwork was. The financier claims basically it was no different than the normal form credit providers need at point of deal; there was only limited extra work for the merchant who was after all specialised operator who had simply to undertake the sale was for the listed items

The energy card is a significant example of financing energy efficiency, but it has some perceived drawbacks as a guide for development. This author offers the following observations

- The scheme being exclusive in products and participants possibly created a bad image or lack of goodwill. Those not included in the range had to lobby to get in after the event. Were options to make the program generic available? or to allow submissions or applications to participate?
- It is hard to see the intended rationale for the card/scheme to become self-sufficient, given the very heavy share of costs by government; there was a heavy average subsidy level to sales (about 35% of selling price) .
 - it is also difficult to see how transaction costs were going to be driven down with the volume of transactions that were possible given the narrow product range (mostly major renovation items); without reasonable volume the maintenance costs of the financial product might never make it viable.
 - although the aim of the scheme was apparently solar water heaters, other appliances and equipment got added on the way; however the range of equipment was still fairly narrow
 - The level of advertising was very great in relation to the volume of goods moved (30% of the sales cost in advertising for the credit mechanism); the scheme could have probably gone on to finance 3 times the volume of credit at the subsidy levels offered with only a 15% cut back in advertising. However a wider range of goods might have been also needed to increase the sales volume by that much.
 - the rationale for energy efficiency implicit in the products which qualified was in the event interesting. Alongside solar water systems (presumably about a 75% cut in fossil fuel use) and minimum 4 star air-conditioners were LPG and CNG conversion and 3 star gas ducted heating.

Other General Australian Energy efficiency programs offered include:

- Renewable energy Promotion Program for stand alone RAPS
- National house energy rating program (With the States)
- Appliance standards
- Greenhouse Challenge

State programs

Over the years there have been many types of State assistance to energy efficiency investment, and promotion of energy-efficient practices and choices for the residential sector. We mention some current programs which are fairly representative, although they do not involve provision of repayable finance. NSW have offered rebates upon solar hot water systems through SEDA, which were funded partly by SEDA and partly by the solar water heater suppliers which participated. In addition programs of retro-fitting some public housing and Housing Association tenanted premises is also being implemented. These latter programs have been partly funded by SEDA and the Housing Commission. Queensland had previously had offered subsidies for solar hot water systems, though currently this scheme is in abeyance.

4.3 Provision of Energy efficiency finance- Overview of selected Countries

United States

The Federal government provides substantial financial assistance to states and utilities for conservation and DSM programs in the residential and commercial sector. Grants for such programs total about \$300 to \$400 million per year mostly low income weatherisation (insulation)

National Energy Appliance Conservation Act 1987 set mandatory standards for 12 types of household appliances covering most residential equipment.

MEASURING IMPACTS - TWO US CASE STUDIES

Wisconsin Electric Power Co

The Smart Money Energy Program offered rebates (\$25-75) plus low interest loans (up to one year) for customers buying high efficiency appliances eg air conditioners and refrigerators.

Impacts of the Smart Money Energy program were measured and continued after the program offer closed and also in neighbouring areas where there was no program.

New Jersey and Penn, a US utility, provided free energy efficiency audits to electrically heated homes, at an average expense of \$670 per household and obtained a 6.6% reduction in energy use. This implied an average payback of 5.8 years

Source :(Geller 1989)

The US Department of Energy

- sets energy efficiency standards for new residential and commercial buildings and for Federal buildings.
- provides assistance to state and local government to incorporate energy requirements into local codes

US Energy Conservation Programs are generally aimed at overcoming barriers to efficient operation of energy markets, particularly the provision of information and improved transfer of energy efficient technology to the market.

- US utilities were spending about \$2 billion per year on demand side management programs in the mid-1990's
- State programs were running at about \$500m pa, down from about 1 bn early 1990s

A major stimulus to utility programs has been the fact that Public Utility Commissions (PUCs), which regulate utilities, are mandated to consider integrated resource planning and many PUCs already require utilities to do so.

The government provides some additional contribution to financing renewables through its Tax/Subsidy regime:

- Wind and closed loop biomass electricity generation may take advantage of a 1.5c per kwh tax credit
- Solar and geothermal energy may take a 10% investment tax credit
- There are no taxes on domestically produced renewables (IEA 1996)

We will in Chapter 4.4 and 4.5 specifically cover the issue of US energy efficient finance and its applicability to Australia.

United Kingdom

In the UK, energy conservation and efficiency are located under the Department of Environment. Government financial incentives include Energy advice, grants for insulation and draught proofing for low income households (Home energy efficiency scheme)

The Energy Savings Trust (EST) was set up by the government, British Gas and the electricity companies. The Trust is developing projects financed by its members to promote energy efficiency aimed primarily at residential and small business consumers.

It is understood the Trust will provide some form of lending for energy efficiency purposes (details being sent to author), as well as financial assistance for projects.

Japan

Residential Energy Programs include

- Loans on favourable terms and
- tax credits for improving the energy efficiency of homes (IEA 1996)

New Zealand

Renewables supply a significant proportion of total electricity needs - Hydro-electricity (75%) and geothermal (6%).

NZ has adopted

- residential energy efficiency code
- appliance standards
- labelling

EECA (the Energy Efficiency and Conservation Authority) is an independent government agency set up to improve New Zealand's energy efficiency.

EECA's activities include

- providing policy advice and energy statistics
- promotion campaigns (eg Energy-Wise Companies Campaign)
- public education (eg Domestic Water Heating Campaign in 1995)
- seminars on energy-efficiency

Partnerships exist between EECA and industry, schools and hospitals for energy efficiency improvements.

The NZ government introduced the \$18 million Energy Saver Fund in 1995 to foster domestic energy-saving projects for the following five years to be administered by EECA. Allocation of funds is to be by competitive tender for practical measures designed to improve energy efficiency in NZ homes. (EECA, IEA 1996).

NZ participates with Australian Ministers in Ministerial councils on energy and the environment

4.4 Energy Efficient Mortgages in USA

The principles of energy efficient mortgages have been adopted as modified borrower qualification criteria into some lending practices within the USA (and, it is understood, Switzerland). The principles of "stretch" in the standard ratio of debt to income has been accepted by the major mortgage institution for new housing and housing improvement loans incorporating energy efficiency improvement. The proviso on these loans is expressed in slightly different ways but effectively ensure either that the new house rating meets the standard, or that change in rating as a result of the improvement is a minimum number of rating score points, as assessed by an accredited rater.

The advantage claimed for lenders of more efficient treatment of the real debt to income position, in energy efficiency investment lies, in the market implications of the "stretch". US studies show that a 2 percent relaxation in debt to income assessment means that a further 4 or 5 percent of applicants would become eligible for loans if they were to apply for energy efficient housing. The potential for lenders is, therefore, up to 10% higher volume of lending business for the same underlying debt to income profile as a standard housing lending proposal. (reference selections of which are reproduced in Appendix)

Energy Star Home Mortgages (USEPA/USDOE)

In addition to a stretch (which may be greater than 2%), the more recent Energy Star Home Mortgage program, operated by USEPA in partnership with US Department of Energy, provides for differentiated pricing (principally fees and sometimes marginally lower interest rates) in the case of very high efficiency homes (5 star or at least 30% above the standard energy efficiency).

Under the program the government provides the Partner

- Access to the ENERGY STAR Builder List
- Use of a software tool (HomeCalc) to demonstrate the value of ENERGY STAR Homes

- Access to outreach tools to market mortgage products to homebuyers and builders
- Referrals of interested homebuyers who call the ENERGY STAR Hotline about mortgages
- Benefits from the Brand Awareness Campaign to promote the ENERGY STAR brand.

Typical Partner pro-forma agreements for Energy Star Homes Builders, Developer and Financier Partners are included in the Appendix.

For Energy Efficient and Energy Star mortgages to be adopted in practice would require the existence of a standard system of home energy ratings and standard rating process by accredited raters. Documentation of the rating of the new home, or the change in rating for the improvements sought would add some transaction costs for borrower and lender, but these may be considered acceptable in the context of other transaction costs in mortgage processing, particularly in relation to average borrowing amount.

Discussion with an Australian affiliate of an overseas Finance organisations known to be Energy Star Home Mortgage products in the USA unfortunately revealed no direct knowledge of the product. The following observations were obtained in discussion with a participant in the Energy Star mortgage program:

- The penetration of Energy Star mortgages was very low in relation to the number of Energy Star homes complete so far
- Builders and borrowers tended to deal with the "bank in town" locally, rather than national lenders who had joined Energy Star Mortgages
- FannieMae not doing a lot of energy efficient mortgages either.
- the pilot program for energy improvement mortgages had different dynamics and its progress was more hopeful
- Comparisons were regularly made between the Energy Star financiers and local banks - EPA regularly obtained quotes in different regions of the US and drew up a matrix of comparisons between Energy Star and other local banks. Sometimes Energy Star was cheaper, other times they were not. (Dependent upon regional interest rates and fees amongst local banks)
- Energy Star loans for heating and cooling equipment have been discontinued but it was hoped by the government to get something else in its place; these had preferred interest at 13.5% vs 15% usual interest rates (This author is not surprised such differentials were discontinued)

4.5 Applicability of Energy Efficient mortgages in Australia

In this section we explore in a preliminary way whether the different context for the housing market overseas might rule out these models for Australian conditions. We may note some issues relevant to the USA by comparison with Australia:

- The tax deductibility of mortgage interest
- The presence of large government directed secondary mortgage market players who have underwritten energy efficient mortgage terms and conditions (FannieMae, FreddieMac, Federal Housing mortgage insurance programs etc)

We now examine some other issues below.

Different severity of winter and annual energy consumption

It may be claimed, as one discussant observed, that the US weather climate is much more extreme than for the majority of the Australian population, and house envelope efficiency in the USA and Northern or Alpine Europe is a much more serious issue than for the Australian climate. Energy bills there are a much higher proportion of income than in Australia, and that is the key basis for differentiation in financial products. (These assertions should be tested more formally in further work, but an approximate comparison of household energy consumption **per capita** in Australia is about 35% of the USA figure which is consistent with the point asserted)

Against this observation it may be contended that in the US the returns to energy conservation are even higher than in Australia. Many Australian energy efficiency experts advise that fairly standard energy efficiency improvements to home design and construction have short payback periods and high rate of return.

Well established Home energy rating scheme

The US has had a standard Home energy rating scheme in place for a long while, whilst Australia does not have a standard National scheme in place yet.

This is one reason why energy efficient mortgages would be inappropriate on a widespread basis immediately in Australia, as the acceptability of transaction costs at a low level is dependent upon clear uniform ratings which ordinary finance clerks can validate. Requiring bank officers to interpret non-standard reports would be unacceptable both from a processing cost viewpoint and the perspective of uncertainty over energy efficiency performance which is the basis for differentiated criteria. Fortunately, an Australian NATHERS is within sight of completion and implementation.

Australian NATHERS energy rating as adequate as US NATHERS as a predictor of energy bills

The US House energy rating includes the heating systems and actual fuel system, whereas the Australian NATHERS only rates the building envelope without reference to the heating system

installed. There might be an issue in relation to whether an Australian system has adequate correlation between rating and actual energy use.

This issue needs more expert technical work, but the Australian system is generally regarded as technically superior in like-for like aspects. The Australian system has advantages in not being fuel specific, and some modification to include hot water systems can be added as in the NSW Energy Smart Homes policy, though it would be preferable for a national standard modification to be adopted if clarity is to be achieved for the finance industry.

NATHERS planning includes further development of the rating system over time. Provided the Australian rating system is an adequate measure of home heating and cooling energy running costs on a good statistical basis, it should be acceptable as a measure for differentiating between reasonably large pools of lending.

More Conservative Finance in USA

One explanation for the development of energy efficient mortgages in the US by this author is that mortgage finance has been more conservatively rationed than in Australia. Australians have been able to borrow a consistently higher proportion of value without the need for "stretching" techniques to qualify for greater borrowing. The correctness of this assertion may be open to question, as on the surface many of the US ratios seem similar to ratios maintained in Australia.

However the basis for financial product differentiation is better efficiency in risk-return assessment as between energy efficient loans versus standard housing loans, not to get banks to lend beyond their prudential limit. Given different cultures and business conditions in each country it is not surprising that general prudential ratios or debt to equity ratios are different. This does not rule out economically efficient differentials in both countries relative to standard loans in each country.

As it happens, a prominent US consumer group has independently mentioned two of the three Energy Star Home Mortgage providers as among those who charge high fees for mortgage insurance premiums. The Energy Star Mortgage program participant this author contacted does not encounter consumer perceptions that the value offered by the Partners is not real. Moreover the USEPA does regular monitoring of quotes and rates in different regions to prepare public notifications of Energy Star mortgages with other products offered in different places.

The use of stretch causes potential market expansion at the moderate to average income levels and unless a lender has expertise in servicing this kind of market, the basic risk levels applied in the pricing may have a higher base to start than a mortgage provider specialising in housing provision for low to medium income families (as does Fannie Mae).

Energy Efficient Mortgages don't have large Market Share

Energy Efficient Mortgages and Energy Star Mortgages are a small proportion of the home mortgage business. Although some leading institutions have provided adjusted criteria, a sample of InterNet information reveals no evidence amongst those institutions for promotion of the differentiated product.

Fannie Mae has extensive research abstracts into the US housing market on its web site, and there is not one reference to energy anywhere in its public information, although many independent web sites quote their acceptance of energy efficient mortgages. The issue of energy efficiency appears minor in their business. The only people promoting energy efficient mortgages on the Internet appear to advocates for greater energy efficiency from the energy and environmental government departments and lobbyists. However the situation actually prevailing in the housing market may not be accurately reflected in Internet postings. In addition, the Kyoto protocol may have altered perceptions about energy efficiency markets, or continued promotion of the target may reinforce the role for energy efficiency to a greater extent than in the past.

Nevertheless, the apparent relatively low penetration of energy efficiency finance in the US reinforces the need for careful program design. Targets should be considered in future detailed design work, with a view to deciding upon the desired impact an initiative should have, in order for it to be taken up. Programs should be piloted and other market testing should be considered to determine what the useful penetration into selected markets should be. A key issue, especially for any early products launched, is whether to target the first-time home buyer or to target the renovation market and 2nd or 3rd home buyers.

5 OPTIONS FOR FINANCIAL PRODUCTS AND PRIORITIES FOR ACTION

In this Chapter we discuss the financial products that are most likely to be applicable to the residential sector. Broad options and areas for action are discussed having regard for potential market coverage, likely support of stakeholders, success of similar models and relative potential for greenhouse gas reductions. General findings and conclusions are also presented in this chapter together with recommendations for further detailed work which would be required to develop financial products for the household sector.

5.1 Prioritising and evaluating Options

The National Greenhouse response strategy principally requires that measures should be

- effective in achieving the strategy goal
- economically efficient
- consistent with an integrated least-cost approach to energy planning
- in line with the general residential sector goals of the strategy

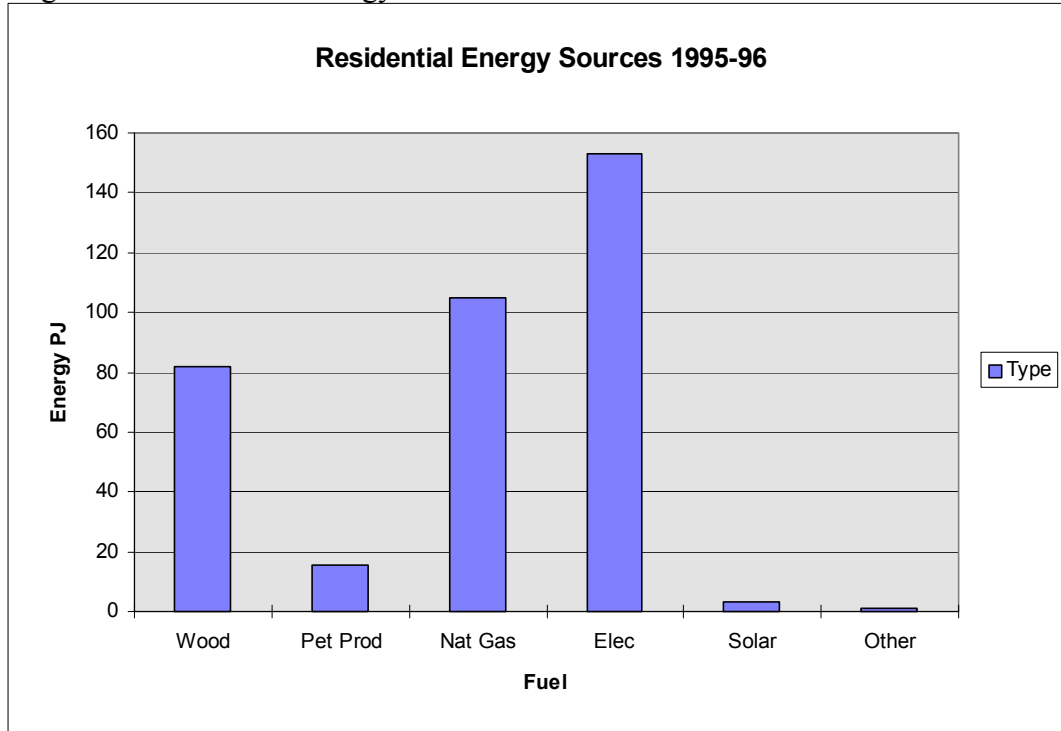
These latter goals are

- improve the energy efficiency of residential buildings and domestic appliances;
- influence householders to become more economical in their use of energy generally,
- and influence householders to switch to energy sources with lower greenhouse gas emissions.

In 1995-96, the latest year for which detailed national data are available, Australian households consumed 360 PJ of energy in non-transport uses (ABARE 1997). This represents just under 12% of final domestic demand for energy.

The composition of fuels used in household energy consumption is shown in Figure 5.1. Although a significant proportion of fuel is woodfuel, household energy consumption is predominantly supplied through **fossil fuel sources**, giving rise to significant carbon dioxide emissions to the atmosphere. Electricity supplied 42 % of total household energy demand in 1995-96, most of which was generated through fossil fuelled steam plant at overall energy efficiencies of under 30% from primary fuel to end user.

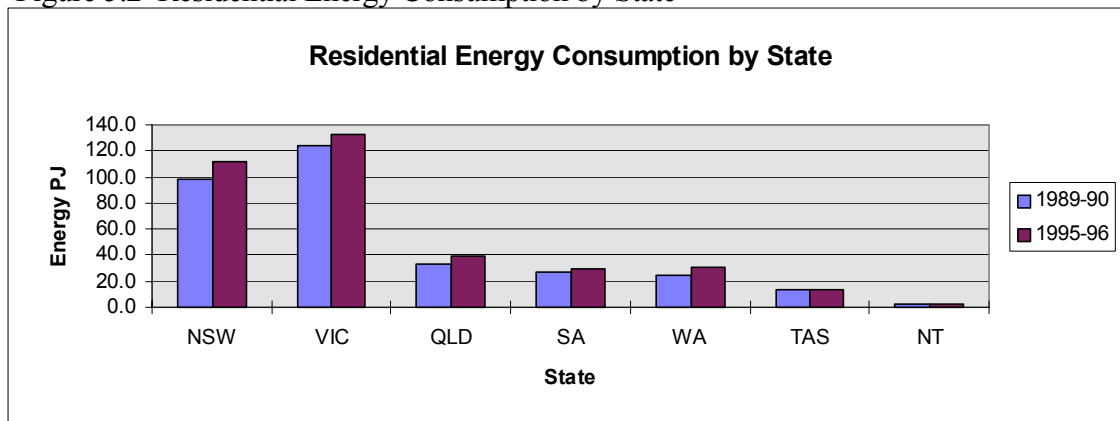
Figure 5.1 Residential Energy Sources



The composition of fuels used in household energy consumption is shown in Figure 5.1. Although a significant proportion of fuel is woodfuel, household energy consumption is predominantly supplied through **fossil fuel sources**, giving rise to significant carbon dioxide emissions to the atmosphere. Electricity supplied 42 % of total household energy demand in 1995-96, most of which was generated through fossil fuelled steam plant at overall energy efficiencies of under 30% from primary fuel to end user.

The patterns of household energy consumption vary widely amongst different regions of Australia as illustrated in Figure 5.2

Figure 5.2 Residential Energy Consumption by State



Household energy requirements are related to population and particularly to climatic conditions. In southern Australia, significant proportions of energy demand are related to space heating, whereas in the more temperate and subtropical areas, energy requirements for space heating are negligible. In all areas air conditioning has been a growing demand, both in summer for the southern states and for most of the year in the north. The household energy use of Victoria is the largest of any Australian state, and the consumption of Victoria and NSW (inc ACT) combined represent 70 % of the national total household energy consumption.

When combined with Census statistics upon dwellings (ABS 1997), the regional differences in household energy consumption are even more striking. Figure 5.3 shows the household energy consumption per dwelling in each State (NSW and ACT are combined).

This figure also highlights the significant role played by home heating in household energy consumption, even though significant home heating demand is focussed in Southern Australia. Indeed NSW, ACT, Victoria and South Australia represent 80% of the national household energy demand, having only 70% of the total private occupied dwellings.

Victoria and Tasmanian household energy use per dwelling is about double the energy consumption of the two Northernmost States/Territories. This indicates that about half of Victorian and Tasmanian household energy (of the order of 70 PJ) is related to climate differences, principally reflected in space heating loads.

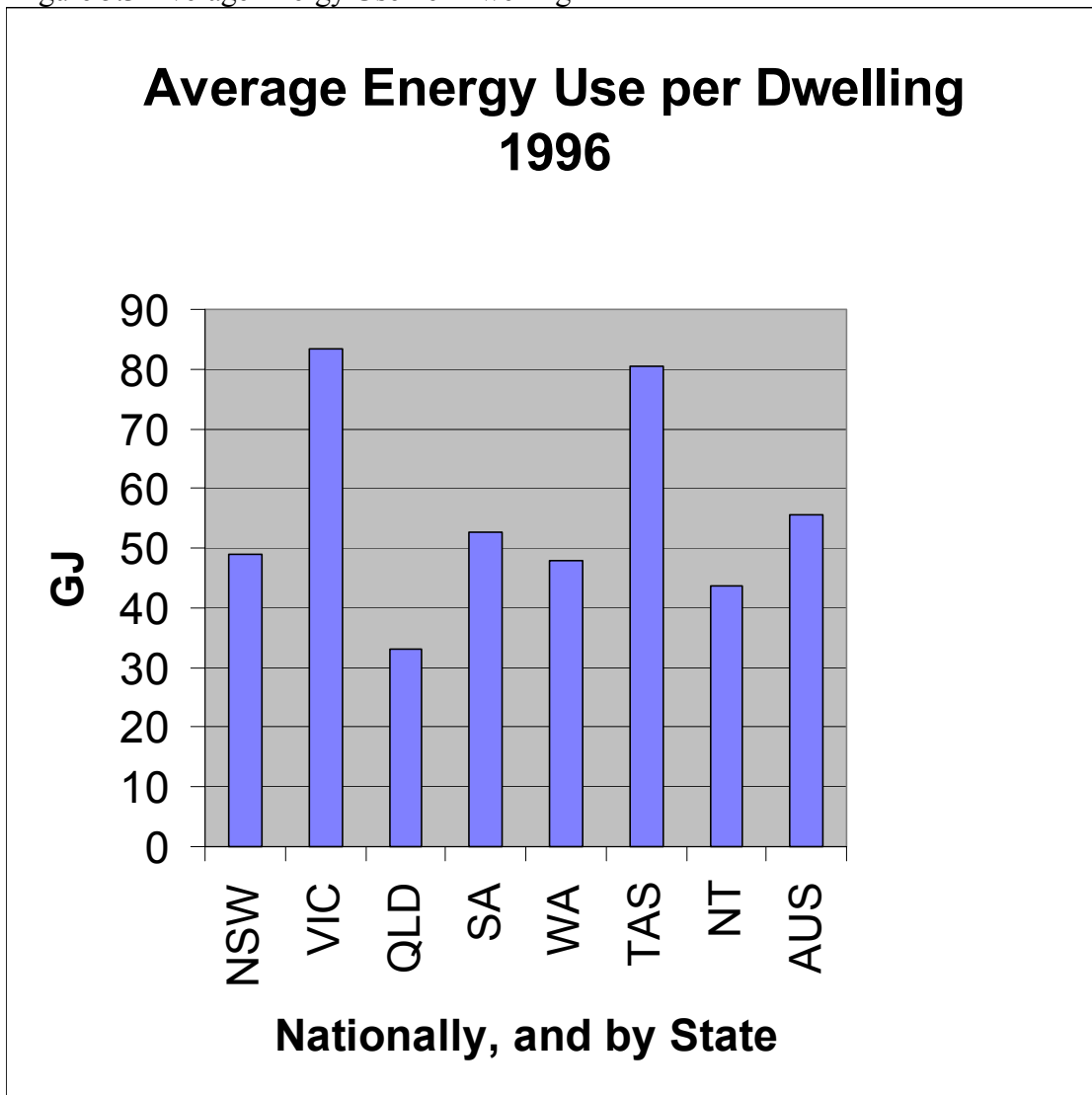
Annual household energy demand for non heating/cooling needs is perhaps only 45 GJ per dwelling (the average dwelling demand allowing minimal heating need in relatively warm-climate States. It is possible to calculate the approximate heating load in each State given data on the number of total dwellings and the energy in excess of this minimum. This rough calculation shows that space heating energy demand in 1996 was of the order of 80 PJ, which represents approximately 23% of total national household energy consumption in 1996. Even if a proportion of this demand was supplied by woodfuel currently, home heating and cooling represents a significant source of greenhouse emissions (apart from the indirect emissions in logging and transportation of woodfuel). Another factor to take into account is the likely future substitution of gas for woodfuel, especially in NSW and Queensland and also southern WA, and perhaps later in Tasmania as gas infrastructure expands further.

Other major energy household uses, apart from space heating and cooling are water heating, refrigeration, clothes washing and drying, lighting and cooking, apart from a range of media receivers and smaller appliances.

Unfortunately direct data upon household end use purposes are not readily available to the public.

Australian residential consumption of energy is increasing significantly, as a result of population expansion, rising income and comfort expectations, coupled with the relative energy-inefficiency of much of the newer housing stock compared with the existing stock. This effect is also discernible in Figure 5.2 above for all States.

Figure 5.3 Average Energy Use Per Dwelling



At a national level total household energy consumption rose about 12% in the 6 years to 1995-96. This is a slower growth rate than the 23% rise in household energy demand in the decade from 1980 to 1990, and may partly be explained by the severe recession in the early 1990's as much as inherent conservation trends.

Marginal Greenhouse Impacts should be the Key policy drivers

The growth of household energy demand in all States illustrates the preferred policy approach of being governed by minimising **marginal greenhouse impacts**, rather than relating to **average impacts under current circumstances**.

For example, Tasmanian household energy conservation might be mistakenly assigned a low priority as current emissions are relatively low, owing to that State's relatively high proportion of hydro-electricity in electricity generation. In addition there is probably a relatively higher use of

woodfuel for domestic heating. However, at the margin each additional GJ of household energy demand in Tasmania is likely to involve **as much or more marginal greenhouse emissions as anywhere else in Australia** - because there is little or no marginal hydro-electric capacity expansion available in that State, and the marginal options are likely to involve low rank Tasmanian coal, or Victorian or NSW coal based generation with transmission losses, or petroleum products or gas piped through new links. These marginal options are all at least as greenhouse-gas-intensive as options on the mainland.

In addition because of the relative inconvenience and associated appliance preparation, operating and ash clean-up and disposal activities, expanded household home heating demand might be less likely to involve marginal increases in woodfuel demand. Future growth might be more likely to involve other conventional fuels or electricity, especially if it is associated with higher income and convenience motivations. This is not to pre-judge other policies concerning renewable options which might become available, but to indicate that impacts due to past choices are fixed. It is the impact of new marginal choice that is the significant one for policy-makers.

Financial Products Contingent on Energy Efficiency Market Development

Despite strong gains from a low base, and despite promising increases in recognition of environmental issues related to energy production and consumption, the market for residential energy efficiency is small and undeveloped. There are significant dependencies upon government policy, particularly regulatory policy regarding labelling and rating of housing and of major appliances. Additional stimulus to energy efficiency is variably provided in the state regulations governing the required behaviour of energy retailers.

A major requirement for market development is better information for consumers at the point of purchase. Although this study has not examined the impact of information beyond the principles, published empirical studies exist which deal with impacts of more information on consumer behaviour.

For the residential sector, energy efficiency market development is dependent upon widespread labelling for major investment and purchases. For major industrial or commercial projects, both the borrower and lender have sufficient at stake to employ energy efficiency expertise in the financial assessment. Indeed it may also be possible to finance household energy efficiency gains by aggregating consumers needs for finance through utility based aggregation, or developer-led aggregation, or appliance manufacturer associations - and in these cases the performance uncertainty over the energy savings is removed through the expertise of the promoters of these large scale deals.

However, for general household purchase decisions, whilst the exceptional person will have sufficient knowledge, the average customer and the average credit officer can be expected to have no expertise in energy matters, and unless energy efficiency benefits are easily available, quantifiable and understood by all participants in the market at the time of the transaction, there is not sufficient information basis for a differentiated finance mechanism to apply to energy efficiency as against general secured or unsecured borrowing.

Complementary measures promoting Energy Efficiency Markets

Under the Prime Ministers Greenhouse package, other measures and policies which modify market behaviour in the residential sector are extremely significant to the success of markets in energy efficiency finance. Neither the ordinary consumer nor the finance industry has competence in energy efficiency, nor should either be expected to have it. Markets develop with the creation of new interests and new stakeholders to supply services, and where the definition of energy efficiency service is more adequately and quantitatively defined and available to potential suppliers and demanders. Definition and development of financial products specifically for widespread household energy efficiency will be constrained by the lack of easily quantifiable measures of relevant benefits to relate to the costs, and facilitated by more widely available information.

- Restructuring of energy supply and distribution to permit greater reliance upon competition and market based mechanisms; the breakdown of vertically integrated supply utilities and the development of retail energy competition even down to the household sector opens the way for development of competitive markets for energy efficiency services
- Codes and Standards for Domestic Appliances; energy use information freely available to purchasers strengthens the formation of markets in energy efficiency
- Codes and Standards for Housing (new houses and major extensions) involving minimum energy performance standards and the Nationwide House Energy rating Scheme and possibly also amendment of State Building Codes; again energy information together with moves to lift performance are key factors promoting development of the market for energy efficiency.

5.2 Scope for action - Use of existing financial products

An important option is promotion of and encouragement towards **greater use of existing financial products and mechanisms** for purposes of greater fossil energy efficiency

Energy conservation and renewables have been promoted by state and Commonwealth government in Australia for 20 years. These messages addressed to consumers, provide general awareness of desirability of energy efficiency whilst maintaining comfort and service levels being smarter, getting more for less rather than "doing without", getting more comfort and peace of mind for no greater cost.

However further consideration within these promotions, and/or through additional promotion, should be given to emphasising the financial returns available, or the investment character of everyday consumer decisions - the existence of a return in savings on future energy use that does not happen for most other spending.

The goals here are

- getting consumers to accept energy saving investment as having a good personal return which will in turn encourage consumers to make more use of credit mechanisms (need to focus on clearly positive return actions) plus social return on top!
- trying to lengthen the time horizon of consumers, to get them to see the value now of future savings and how extra energy costs mount up considerably for them and how sensible additional investment will pay off for them
- developing the idea that high energy consumption and bills are a risk in the event of changed income or family circumstances and these can be minimised by wise decisions now. More peace of mind can be bought.
- developing consumer valuations which positively appraise energy efficient homes and appliances over non-energy efficient ones; in the context of housing, and based upon factual evidence (possibly yet to be obtained), point to future additional value in an energy efficient house compared with a standard house.

Information to the consumer should contain the message that, even if they have to borrow to achieve higher energy efficiency, the benefits in most cases ensure a return that is greater than the interest cost of borrowing. The focus is on getting personal financial and comfort benefits, reducing financial risks and how taking time to consider all the angles into the future will pay off for them personally - not abstract social goals.

Consumer valuation of energy efficiency is vital for signals to builders and developers.

Promotion of greater use of finance for energy efficiency **to other stakeholders apart from consumers** is also appropriate, using different approaches. Promotion **to** the financial sector could also be appropriate.

This step does not necessarily involve pushing for special financial products, and might accompany other discussions and partnerships seeking to promote such specialised products. The goal is to promote to the financial sector the idea of structural change in energy use trends and the growing role for existing financial mechanisms to facilitate improved energy efficiency.

- Emphasise the supportive government role of significant changes to regulations on labelling and house energy performance and requirements for energy rating
- The medium for this form of promotion would be promotion of general research into financial demands related to energy efficiency, promotion of research (in conjunction with financial institutions) into current use of credit for energy related purposes, use of networks such as the Greenhouse Challenge such as conferences or seminars targeted at decision-makers amongst financial sector players
- Stakeholders in the finance sector could be encouraged, with a lead from government, to promote in their own communications, energy efficiency spending as a worthwhile purpose to borrow money for (one of a range of things like education, holidays)

- Encourage financial institutions to include energy efficient homes and appliances as desirable things for consumers to apply and get credit for. Broaden the awareness of credit availability for energy efficiency purposes. In the case of housing spending a bit more money to get higher efficiency accommodation is part of smart borrowing.

Trends in current Financial products offered by Utilities

One feature of existing or recently employed credit mechanisms that may change is the provision of utility finance to residential customers in relation to energy efficient appliances, insulation, hot water systems etc.

In regions where vertically integrated utilities continue to maintain shop-front appliance retailing, such schemes will be likely to continue. However many energy retailers in deregulated markets are disposing of their appliance retailing subsidiaries and withdrawing provision of credit for appliance sales by allowing customers to pay the items off on their reticulated energy account. Even where continuing appliance retailing is continued, perhaps under "ring-fenced" accounting or franchise arrangements, credit is tending to be provided through general consumer credit underwriters, rather than the former energy retailer. There may be growing recognition of the specialisation economies that mass market credit providers may have against utility resource specialisations, and in addition the requirements of the new Consumer Credit Code may also provide incentives to leave management of credit provision to specialists.

The above trend does not mean that utility based finance for energy efficiency is unlikely to continue, but that new financing mechanisms involving deregulated utilities is likely to emerge in addition to those operated currently and formerly in vertically integrated utilities. New credit mechanisms might conceivably involve direct marketing arrangements with appliance manufacturers, financed through a third party financier with consumer repayments through the energy retailer's billing system. Self-finance of High Street shopfront whitegoods and heating systems retailing may be a declining mode.

Consumer credit code

Any organisation that provides money for personal- or householder-related purposes for repayment at a later time including fee or interest comes under the provisions. Additionally, organisations providing goods for payment for goods or land on instalment is likely to come under the provisions of the National consumer credit code which came into place in November 1996.

This code has specific provisions for the creation of a credit arrangement which may be required to be observed, in particular a written proposed contract containing the full terms of the arrangement must be available to prospective customers prior to any transaction being entered into.

Whilst existing financial institutions are likely to have standard procedures in place, care will need to be observed by non-traditional lenders engaged in providing energy efficiency finance to observe the requirements of the consumer credit code.

Thus promotion of existing credit mechanisms supplied by utilities

- should recognise specific differences in utility retailing structures in different regions, and the potential for details and structures to change
- would benefit from being based upon a program approach (within which utilities meeting generic guidelines are supported) rather than based on a specific method or product or project. A program based approach might also provide support to other "service providers" employing regular householder payment systems to participate in similar projects, eg petroleum product and LPG distributors, local government bodies etc

5.3 Scope for action - potential financial actions by Government

The main focus of this study has been the possibility of government promotion of third party private financial products for energy efficiency. We briefly review possibilities for using government policy more directly.

Government grant or subsidy

These have been and will continue to be appropriate for some demonstration purposes - ie emerging technology.

Apart from equity considerations (low income households) grants for everyday adoption of available marketplace products that are economic is hard to justify. No rationale why

government should tax some consumers in order to subsidise others to get a benefit (energy efficiency investment yielding lower energy bills) that is said to be economically sound without subsidy. It is acknowledged that there may be considerations of externalities which can modify such considerations.

Fiscal issues

The following points are noted as potentially significant, although fiscal mechanisms are not at the centre of this study

The government's tax reform proposals have the potential to influence energy efficiency economics, to the extent that consumer fuel prices relative to other goods may increase. The changed incidence of any taxation upon housing, equipment, appliances relative to fossil fuels may alter. The government currently has provided some sales tax concessions to some renewable components although it is understood some tax system anomalies are present.

The treatment of interest for residential mortgages, or at least for that part relating to energy efficiency improvement is an issue perceived as relevant by financial sector stakeholders.

Potential for Government Demonstration or Piloting

Government may have some potential to develop financial mechanisms and prototypes for energy efficient lending within the administration of its own lending programs.

At the core of such products is formal recognition of a higher than standard requirement for debt, plus recognition of credits for energy saving in the disposable income of the lender. Such recognition can be highly effective even where the government is not providing primary finance - for example in the USA the leading player and influence over terms for residential mortgages is the secondary mortgage maker (Fannie Mae) where its terms for buying income streams from primary lenders dominate the structure and terms allowed in primary mortgage providers.

The development of energy-efficient lending guidelines and criteria could be initiated and incorporated (in consultation with the relevant stakeholder) in lending guidelines for programs such as those below. This is not an exhaustive list, but a preliminary indication of areas which have been used overseas:

- Public residential housing (federal and to the states)
- Defence Housing (including also any lending for returned servicemen housing assistance or improvement)
- National Parks residential and public buildings
- Rural finance for residential purposes
- Aboriginal residential and residential improvement programs

Several arguments support the seeking out of potential opportunities within the government lending program for energy-efficient lending practices:

- experience in piloting, testing and operating the guidelines

- demonstration to the private sector of the government's bona fides ("not asking the private finance sector to do anything the public sector is not prepared to put into practice itself")

Loans or grants towards commercialisation of renewable energy technology

One particular potential area for incorporation of energy-efficient finance techniques could be the requirements of applicants for loans or grants towards commercialisation of renewable energy technology. It could be made a requirement that any project funded under these schemes include feasibility studies for channels of commercialisation finance, particularly where penetration into general household markets is envisaged. In such cases the issues of consumer labelling or rating should be directly addressed together with the extent to which finance for end-user adoption envisages "credit stretch" or marginal relaxation of other terms to account for lower real net burden of the debt on the borrower.

5.4 Scope for action - possible new financial products

The research done for this report leads us to expect that in addition to generally available credit mechanisms, there is potential scope for development of **specific energy-efficient financing in home purchases and housing improvement loans, supported by standard energy rating assessment**. Such finance will be secured through mortgage. To the extent that a customer may be prepared to purchase high-efficiency appliances (other than fixtures included under home improvement) these might be able to be additionally financed under secured loans.

Most **appliances** are financed from savings or through unsecured finance. Apart from promotion of labelling of appliances and manufacturer recognition, there seems to be limited scope for differentiated finance products for appliances at the point of **general consumer purchase**. The transaction costs and consumer inconvenience of maintaining differentiated finance products for appliances or systems of different energy performance are likely to be too great.

However, there may be scope, but in special cases, for differentiated finance, for high efficiency major-usage domestic appliances, water and space heating. Such cases might occur where volume of transaction is large through aggregation by a party organising the energy efficiency improvement, and there is little cost of bureaucratically separating records as between ordinary sales and energy efficient sales.

This latter situation could apply if, for example

- a large manufacturer of energy efficient systems arranged vendor finance accordingly,
or
- a renewable industry association negotiated special finance for all sales of its members,
or
- a utility promotion made offers of nominated high efficiency equipment to its customers (separately from marketing general appliances)

- the offer was made as part of a utility energy service company's service package to a wide range of customers

The above findings do not assert that there is a market for energy efficiency finance ready to be exploited, but that there is scope for exploring options and promoting the possibility in a more detailed and researched manner.

Development and Consultation on Generic Energy efficient Finance Guidelines

In the scope of this research it has become clear that whilst the finance sector is keen to embrace the principles of good corporate citizenship regarding Greenhouse response, it does not have understanding of the potential for energy efficiency financing, or the kinds of credit mechanisms that might be involved. It is clear that probably no finance sector participant dealing in consumer finance has done any recent work upon potential financial products for energy efficiency. Accordingly it has been difficult to get specific comment or responses. Participants agree the industry is keen to explore proposals for business that are profitable at an acceptable risk but have no detailed responses of how these issues might translate into energy efficiency finance. It seems likely that clearer responses and attitudes will be forthcoming with more detailed stimulus of some draft guidelines or proposals for discussion.

Guidelines for promotion of energy efficient finance partnership could be based on other schemes in operation in Australia or overseas - in these schemes Government endorses a concept (perhaps a branding also) and supports the partnership with corporate advertising for the scheme (and or brand) related awards and promotional events, and possibly further assistance. In return Partners are permitted to associate themselves with the campaign (or brand), use the logo in their own advertising and literature, and may also get referrals from inquiries from the public relating to that program.

Partnership requirements upon the private finance sector would be agreement to adhere to generic guidelines for the program in conducting their business and may include

- formal agreement with the shared goals of the program with government and other partner categories (eg builders, developers or manufacturers as appropriate)
- application of the program to high energy efficiency homes or appliances as appropriate (well above average or mandated)
- recognition that the program does not involve cross-subsidy for energy-efficient borrowers from other borrowers, but reflects perceived and actual favourable differential risk and cost in the pricing of the debt be passed on to borrowers
- some recognition of differentiated treatment of high energy efficiency end uses for the finance, consistent with sound business principles, which incorporates allowances for lower future energy cost in return for higher initial cost in the hands of the borrower by comparison with standard borrowers. Such treatment could apply to criterion used for

debt to income ratios, to marginal risk of default, to marginal recoverable asset values assumed, insurance cost loading, or combinations.

- it would be proposed that some benefit for high energy efficiency purposes as against terms offered for similar general lending for standard purposes would need to be demonstrated from time to time;

In order to advance discussions and consultations with the finance sector it will be necessary to develop a draft proposal or discussion paper, in some detail, advancing the business case for the program and offering some quantitative global guidelines for differentiated criteria for energy-efficient borrowing as against ordinary borrowing in the same class.

Guidelines should not be too prescriptive on detail at any stage and permit flexibility for competition and market targeting according to different goals and markets of finance companies. provided there was genuine recognition of energy efficiency differentiation in the product.

Possible Stakeholder support

As indicated previously, there is not enough detail available for informed responses from the most critical stakeholders - the financial sector.

We may speculate on potential motivations for finance company stakeholders to reduce their margins

- short term publicity and corporate positioning
- buying entry into overall market through niche features (which may also expand later into mass market) ;
- buying market share (short run strategy)
- tighter loan portfolio assembly and pricing (long term competitive positioning)

It is the latter motivation which is addressed by energy efficient mortgages but promoters of energy efficiency and reduced greenhouse emissions will not object if the other motives come into play. However we do not have sufficient basis for estimating the level of support at this stage and we recommend preparing further work to discuss with financiers.

Within broad guidelines, Government will need to respect the individual differences in the way finance sector may want to specify a financial product. Government cannot expect to design fine details of financial products or their pricing as fees, interest rates etc. Each financial participant will do their own from their own positioning and objectives

Government wants to promote the market and can "endorse" or promote a generic product or service, provided it meets guidelines.

Government could develop guidelines in such a way that it is likely many institutions are likely to qualify and several will actually provide services within the guidelines.

5.5 Conclusions

Is there an artificial shortage of finance for household energy efficiency - ie are there people who have sufficient means prudently to afford to purchase energy efficiency on credit products but who are locked out for lack of appropriately structured products.

Only a tentative answer can be provided at this stage, but the answer to the above question seems to be

- that there may well be householders whose net income after fixed commitments and energy bills would be adequate to service the loan required for an energy efficient home whereas they would not be able to service the loan on a standard home; however applying standard credit assessment to their application gives no credit for significant savings available for servicing a loan on an energy efficient home.
- that a standard means of certifying the performance of the energy efficient home (or major improvement alterations) will soon exist on a national basis for the information of consumers, together with accredited raters who can provide this service at a cost (order of \$100-\$150) that could be acceptable to consumers within the scale of other fees and certificates required for mortgage finance
- In the case of appliances, and minor retro-fitting it is possible that a case might be theoretically made for adjusting net income to service the loan (so as to qualify greater permissible debt); however the scale of energy consumption for most individual appliance purchases is lower than the scale of energy implied in the house purchase decision.
- However the transaction costs of separately identifying appliances as energy efficient at the point of sale, and qualifying them for a differentiated financial product compared with other standard appliances are likely to be too high to support an efficient differentiated financial product at the general consumer retail level.
- reduced transaction costs for achieving a segregation of appliance sales to permit specialised financial terms might be achieved by aggregating the transactions eg to the level of an industry or a utility and ensuring transactions only involve high efficiency.

It is unlikely that energy efficient finance will develop on its own. Financial institutions do not know enough about energy efficiency investment to consider tailoring financial products for these purposes.

There will be a significant number of households who can not afford energy efficiency no matter how favourably it is financed. For these households, direct grants or subsidies (or direct provision of energy efficiency services) will be the only feasible way to promote energy efficiency investment. Retro-fitting programs by public housing authorities are examples, and although rents could be raised to ensure the user pays, it is understood that this is not undertaken as a result of such programs.

5.6 General Recommendations

The AGO should only initiate programs with a long term presence in view; make progress through careful research, consultation and design steps into the particular services or products; consider *programmatically approaches and concepts* rather than *projects* that will be wedded to individual firms, and embrace evolution and change in the instances and participants.

AGO is undertaking work on overall integrated Household sector strategy but it is a significant issue to resolve **whether to develop a brand name** for the overall energy efficiency/renewables set of initiatives. It can develop and lock in synergies between partners (eg Energy Star in US)

An umbrella recognition concept or brand for all national greenhouse energy amelioration promotion. Suggest be coordinated and shared /funded across AGO and DPIE at least. It is easier to create partnership promotions with rights for Partners to use the logo or brand than allowing them to use your Government logo.

Options

- Widen Greenhouse Challenge program :
- Perhaps negotiate with USEPA to use the name Energy Star in Australia, but not very "nationalistic" and may raise problems; also concept of extremely high efficiency homes may not be correct positioning for financial products for the residential market compared with moderate efficiency target
- Energy Smart, but raises problems over terminology allies partners, etc as these operate at state level
- Develop a new name concept which can be used additionally by the state agencies

There is some small risk of "Partnership fatigue" in the corporate community, particularly with energy utilities. There is Greenhouse Challenge, various SEDA partnerships and Allies, perhaps others also at State level. The costs of negotiating and administering separate partnership and allies agreements are not insignificant, and there will need to be some separation of greenhouse savings induced under different partnership agreements.

Another factor to bear in mind is that the finance and insurance sectors may be involved in other approaches with the Department, eg initiatives on Cleaner Production. Although there is some similarity between the two issues, and some common problems, it would appear that the issue of developing financial products for household energy efficiency is different to that of understanding and accommodating risks in providing financing and insurance services for industry. (Certainly the personnel involved would be expected to be quite different within the finance or insurance firms involved).

Recommendations for Action on Financial Products

1. More detailed work should be carried out into options for financial products within the Australian context. Additional work is appropriate to progress issues raised in this introductory overview, such as

- more detailed research into the impact on energy bills of energy efficiency investment, particularly higher energy rated housing
- further research and simple modelling into the risk of default of lending to energy efficient homes
- valuation accorded energy efficiency assets once installed
- estimates of the size of the market (these would draw upon household expenditure patterns, income distribution data and simple models of mortgage finance qualifying patterns)
- characterisation of target market segments, and possible phasing of market segments

A paper would form the catalyst necessary to develop concrete possibilities and from there to gauge the responses of the key stakeholders, particularly the financial sector. The issues raised in this study, supplemented by additional research could form the basis of a discussion paper for consultation. As indicated in this report, whilst not ruling out other areas, we see the most fruitful impact areas for financial products for energy efficiency as

- firstly household mortgage products,
- secondly, appliance/heating systems financing but most likely restricted to **aggregated residential programs** pioneered or organised by utilities or industry/manufacture associations etc rather than personal finance

2. The process for consultations with Stakeholders might be influenced by the structure of general processes being developed by AGO for the Household sector.

Whilst the support of peak bodies will inevitably assist any initiatives or programs, it is not clear that the process of designing details of possible schemes will be best processed by direct involvement of peak bodies, or at least for all stakeholders. We consider this to be an issue to be floated further in discussion of options for more detailed discussion with the finance industry.

3. Some options for consulting on more concrete ideas and proposals would include

- individual face-to-face consultations; these offer privacy but are intensive on government resources, and run the risk of omitting an aggrieved potential participant. There is also a risk of such sessions involving elements of private negotiations which might cause difficulties if some form of public invitation process was later involved.
- use a general committee to be established under HGA; the main difficulty would be that key specialist stakeholders (eg financial institutions) may not be represented at a general level, and may not wish to commit resources on an ongoing basis at this stage.
- use of a special seminar or workshop to obtain responses
- use of formal written consultation is possible but not favoured as the main medium because of the need to get interaction and a flavour of the background to the comments

Consideration should be given to holding a seminar or forum on energy efficiency finance. A low initial time commitment such as a seminar or workshop, with key consumer finance managers invited would provide an open-ended but reasonably high-quality interchange from which the willingness of key players to proceed any further might be gauged. A representative selection of non-financial stakeholders would also be appropriate. The session could include invited short prepared presentations from invited stakeholders as well as presentation of points from the Discussion paper.

4. The process of further definition of program or other supportive actions will be easier to decide in the light of the consultation, and other decisions made by AGO on the broad structure of residential programs.

One option might be to develop a pilot scheme or to seek allies for a pilot scheme. However some institutions might be prepared to seek to launch a product or project with support from the government.

5. Energy efficiency finance should develop alongside rating and labelling schemes, and will depend upon infrastructure set up in these processes.

6. Review current lending programs with a view to introducing energy-efficient criteria into these lendings

7. Consider using upcoming Greenhouse loans and grants incentives as appropriate to leverage attention to energy efficient financing in these commercialisation projects

8. An internal review of lessons from the energy card scheme would be helpful. This overview has reported comment and views without the benefit of access to files.

- Proceeding with programs for promoting finance particularly for solar water heating and insulation could generate misunderstanding if there are "loose ends" still relating to the Energy card. Also any strategy may need to counter adverse comment or comparisons in a factual way.

9. There is scope within any public education campaigns developed in HGO fora segment emphasising the financial aspects of energy efficiency decisions and the option of borrowing with current financial products. This Chapter details the message content.

10. There is scope, without prejudging or foreshadowing any new financial products, for developing promotion and messages towards influencing and educating the financial sector of the issues and opportunities for finance of energy efficiency. This Chapter also details the suggested message content.

6. Appendices

- 6.1 Typical letter of explanation opening solicitation of views
- 6.2 List of organisations approached as part of this project
- 6.3 Glossary of terms and abbreviations
- 6.4 References and Resources
- 6.5 Energy Star Finance and Related Agreements and Promotional material

6.1 Typical letter of explanation opening solicitation of views

(KEY ECONOMICS LETTERHEAD)

Key Economics Pty Ltd
ACN 075 392 595

29th April 1998

Dear Residential Energy Sector Stakeholder

Financial products for Residential Energy Conservation

I write to seek your assistance in relation to a study I am conducting on behalf of the Australian Greenhouse Office (AGO), within Environment Australia.

The AGO has initiated a research project on the possible future role of financial products in assisting households reduce greenhouse gas emissions, principally through increased overall efficiency in fossil energy consumption. The results of the research are intended to assist further development of government policy.

In part the project will:

- identify attitudes within the finance sector to prospective financial products for the residential sector
- outline existing Australian and overseas models or programs
- research the attitudes and roles of key residential sector players

Key Economics Pty Ltd is an economics consultancy specialising in minerals and energy industry issues and I am undertaking this research on behalf of the AGO.

Whilst I have access to a range of background resource material I am seeking up to date data and views that key stakeholders in the residential energy sector have about prospects, opportunities, past experiences, or constraints associated with promotion of household energy efficiency through various finance or credit mechanisms. (Any views which may be expressed in the work would not be attributed to any individual or company).

I propose to phone you initially to discuss this further.

Yours sincerely

Brendan Millane
Director

Appendix 6.2 List of organisations approached as part of this project

Category	Organisation
Client	AGO
Govt energy Policy	DPIE(2) Edmund Barton Bldg Core 3 level 2 Wing 4 Barton cafe side
Govt policy	SEDA
Govt policy	Energy Victoria(2)
Govt policy	ACT (2)
Government Environmental or Energy Advisory	Environment ACT
Government Environmental or Energy Advisory	Energy Information Sydney
Government Environmental or Energy Advisory	Energy Information Melbourne
US Energy Star Mortgage participant	USA
Local govt	peak body ALGA
Local govt	NSW LGA
Local Govt	Specific Local government bodies Manningham, Moreland, Armidale
	Cities for Climate Protection CCP

Category	Organisation
Finance/ Insurer	AMP
Finance	Consumer credit provider AGC(2)
Finance - peak banking body	Austr Bankers Assn
	Retail bank Cwealth(3)
	REtail Bank WPAC
	Retail bank NAB
Merchant/ Investment Banks	BT Australia
Merchant/ Investment Banks	Chase MAnhattan Bank Sydney, New York
Consumer finance	Consumer finance NRMA
Energy Utilities	Gas Indy Peak body AGA
Gas appliance showroom	GAsMart (Vic)
Electricity Utilities- Peak Body	ESAA
Gas/Electricity retailer	AGL (4)
Electricity retailer	Energy Australia(2)
Electricity retailer	Integral Energy(2)
Electricity retailer	Energex Qld

Category	Organisation
Appliance Distributor /manufacturer	Whitegoods distributor Kleenmaid
Housing providers	MBA
	HIA
Builders	Glenvill Pty LTD
	Darnley Homes
	Clendon Vale Homes
	Kleinert Homes
Insurance/Finance	Insurance Council
Renewable industry	Solahart Vic
REnewable Industry	Woodfuel Heater manufacturer Coonara
Insulation providers	CSR Bldg Materials(3) VIC and NSW
Consumer association -peak body	Australian Consumers Association
Conservation lobby	ACF

6.3 Glossary of terms and abbreviations (to be expanded)

ABA Australian Bankers Association
AGA Australian Gas Association
AGO Australian Greenhouse Office
CFL compact fluorescent lamp
diffusion
DPIE
DSM demand-side management
Energy efficient Mortgage
Energy Star
ESAA Electricity Supply Association of Australia
ESCO energy service company
Fannie Mae
Freddie Mac
HVAC heating, ventilation and air-conditioning
IEA International energy Agency
IRP integrated resource planning
kWh kilowatt hour
market transformation
MW megawatt
NGO non-governmental organisation
NPV net present value
USDOE
USEPA

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Energy Efficiency Financing & Home Energy Ratings - Consumer and Lender Resources accessed at www.ase.org/finance.htm

Istanbul Seminar on Energy Efficiency Finance accessed at www.weea.org/seminars/turkey95/

Appendix 6.5 Energy Star Finance and Related Agreements and Promotional material

ENERGY STAR MARKETING MATERIAL TO LENDERS

(extracts from Energy Star website)

Financing Partner Toolkit - ENERGY STAR Homes Benefit Mortgage Providers

Through this Program, your company offers ENERGY STAR Mortgages with discounts and incentives for customers purchasing ENERGY STAR Homes.

Your company has teamed with the U.S. Environmental Protection Agency (EPA) to provide special financing for energy-efficient homes that qualify as ENERGY STAR homes.

As a Lending Partner, your branch can accrue substantial benefits from offering ENERGY STAR Mortgages. In this section of the Toolkit, you will learn about the ENERGY STAR Homes Program and the benefits to lenders and loan officers.

The bottom line is that the rapid growth of the ENERGY STAR Homes Program will provide you with the opportunity to write more loans that are larger and safer.

Here is how your company can benefit:

ENERGY STAR Homes Program has had an incredibly successful year, enrolling more than 400 builders in 1997. EPA anticipates adding many more to its roster. By 2003, developers will be building more than 200,000 ENERGY STAR Homes per year, and these homes will need financing. Offering ENERGY STAR Mortgages provides a substantial cross-selling opportunity.

Additionally, with special underwriting guidelines, more than 2 million more households in the United States can qualify for an ENERGY STAR Home than for a comparable standard home. This means more customers for you.

The special underwriting guidelines allow ENERGY STAR Home buyers to qualify for larger mortgages-up to 10% larger! This means larger loans and servicing rights for you. EPA estimates that ENERGY STAR Homes will generate more than \$256 million of servicing rights nationally to mortgage lenders over the next 7 years.

Safer Loans:

Studies show that energy efficiency increases the value of homes. Evidence indicates that for every dollar decrease in annual fuel bill, the value of the home increases by \$11 to \$24. This translates into more equity for the home buyer, a lower loan-to-value ratio, and less likelihood of default.

How Special Financing for Energy-Efficient Homes Expands the Mortgage Market

When a customer wants to obtain a mortgage for purchasing an energy-efficient home, lenders can stretch the income ratio by 2 percentage points to account for the savings from lower utility bills associated with energy-efficient homes.

The stretch increases the number of people who qualify for an average-priced, energy-efficient home. EPA has conducted research that shows that a 2% stretch increases the number of customers who qualify to purchase an average-priced, energy-efficient home in typical areas by approximately 5%. In the Indianapolis area, for example, almost 16,000 additional households qualify for the average-priced, energy-efficient home. Nationally, almost 3 million additional households would qualify for an average-priced, energy-efficient home.

Although ENERGY STAR Homes are being built all across the United States, EPA has targeted cities that have high levels of new construction for rapid market penetration.

For a home buyer to be able to afford the average-priced ENERGY STAR Home in America (\$126,900), he or she would need an income of \$36,900. The 2% stretch increases the home buyer's purchasing power substantially. In fact, a home buyer with household income of \$36,900 could afford a home that costs \$132,200. That is \$5,300 more than without the stretch. In other words, your average customer can suddenly afford mortgages that are 4% larger than without the stretch.

The bottom line is that, by offering ENERGY STAR Mortgages, you can qualify more buyers to buy more expensive energy-efficient homes. This means more business and more profits for you.

National Brand Campaign

In August 1997, EPA began an extensive national campaign to increase consumer awareness of the ENERGY STAR brand name.

ENERGY STAR products include home appliances, office equipment, new homes, and home electronics.

ENERGY STAR Homes Program actively recruits builders, industry Allies, Finance Partners and Raters. EPA offers training and support materials which emphasise the advantages of the ENERGY STAR Mortgages (plus referrals of inquiries from its HotLine contacts).

The Rapid Growth of Other ENERGY STAR Programs such as those for computers, office equipment and buildings helps to build brand recognition and acceptance.

Synergy between PARTNERS

Home builders, referring buyers to the ENERGY STAR Financing Partners for their preferred mortgage options.

ENERGY STAR Raters test houses, recruit builders, and provide third party assurances of Five-Star energy efficiency.

ENERGY STAR Mortgages

The Environmental Protection Agency is working with financial lenders to offer ENERGY STAR Mortgages that provide preferred terms. These loans and the benefits of energy-efficient features can make owning an ENERGY STAR Home a smart choice for home buyers.

Interest Rate Benefits

ENERGY STAR Mortgage Partners offer competitive interest rates that often are below retail rate. These interest discounts can result in monthly mortgage payments for ENERGY STAR Homes that are only slightly more or the same as a standard code home. Since monthly energy savings typically exceed small increases in monthly mortgage, ENERGY STAR Home owners can experience positive cash flow from day one.

Cash-Back After Closing

Some ENERGY STAR Mortgage Partners provide extra cash-back after closing. These discounts may exceed or even eliminate any additional up-front costs required to purchase an ENERGY STAR Home.

A Larger Home

Under special underwriting terms, with more liberal qualifying requirements, ENERGY STAR Home buyers can qualify for 10 percent to 24 percent larger mortgages than those who purchase homes that are not energy efficient.

Under standard underwriting requirements, a home buyer's mortgage payment plus insurance costs and taxes cannot exceed 28 percent of a home buyer's monthly gross income. ENERGY STAR Mortgages cap the debt-to-income ratio at 30 percent or 33 percent, depending on the lender.

Higher Appraised Value

Some ENERGY STAR Mortgage Partners can appraise the value of the home to realise the additional value brought by the energy efficiency upgrades. ENERGY STAR Homes will be positioned for a higher resale value due to their superior features.

The Financial Benefits

When the benefits of an ENERGY STAR Mortgage are paired with reduced utility bills, an ENERGY STAR Home buyer can save significant amounts of money. For example, an ENERGY STAR Home owner investing \$35 a month positive cash flow could accrue thousands of dollars the first 10 years, and tens of thousands of dollars over the full life of the mortgage. Coupled with the greater comfort of an ENERGY STAR Home and its higher resale value, an ENERGY STAR Home is a smart choice.

**MEMORANDUM OF UNDERSTANDING (MOU)
BETWEEN
THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA)
AND**

[Name of Lender]

I. Common Agreements and Principles

A. This a voluntary agreement between [Name of, Lender], a financial services corporation, (“EPA ENERGY STAR Partner” or “Partner) and the United States Environmental Protection Agency (EPA), by which [Name of Lender] joins the EPA ENERGY STAR Financing Program. The terms of this Memorandum of Understanding (MOU) shall apply to ENERGY STAR Mortgages arranged by and implemented by the Partner.

B. The Partner and EPA agree that the primary purpose of the EPA ENERGY STAR Residential Programs is to reduce combustion-related air pollution by increasing the market penetration of energy efficient equipment and appliances, upgrading the energy efficiency of existing homes, and improving the energy efficiency of new homes.

C. The Partner and EPA agree that many cost-effective energy efficiency measures are not taken by builders, and many cost-effective highly efficient appliances and building heating and cooling (HVAC) equipment are not purchased and installed, because consumers have not had available to them attractive mortgage financing.

D. The Partner and EPA agree that more consumers may purchase energy efficient new homes and would retrofit their homes to improve the homes’ energy efficiency if attractive mortgage financing were available.

E. The Partner and EPA agree that the lower residential fuel bills which would be the result of more energy efficient homes should lead to improved regional economies and greater national prosperity.

F. The Partner and EPA agree that maintaining public confidence in the EPA ENERGY STAR Financing Program is critical to achieving the shared goals of the Partner and EPA.

G. The Partner and EPA agree that membership in the EPA ENERGY STAR Financing Program is essential to the cooperative effort to achieve the shared goals stated above.

II. Definitions

- A. ENERGY STAR Home: A highly energy-efficient home that has qualified under EPA's ENERGY STAR Homes Program.
- B. ENERGY STAR Mortgage: A mortgage that finances the purchase of an ENERGY STAR Home and meets the qualifications stated in Section III.
- C. ENERGY STAR Loan: A loan that finances the purchase of ENERGY STAR equipment and appliances, upgrading the efficiency of homes and commercial buildings.
- D. ENERGY STAR Financing Program: A program that includes the ENERGY STAR Loan program and ENERGY STAR Mortgage program. A Partner in the ENERGY STAR Financing Program may offer an ENERGY STAR Loan or Mortgage or both.
- E. FHA Energy Efficient Mortgage: An FHA loan to purchase an ENERGY STAR Home that allows the loan amount to exceed the statutory loan limits by the amount of the cost effective energy improvements or upgrades. Improvements or upgrades up to \$4,000 or 5% of the property value (not to exceed \$8,000) may be financed. No additional down payment nor additional appraisal is required. Borrower's allowable income and debt ratios may be increased by 2 percentage points to qualify for FHA financing.
- F. Energy Efficient Mortgage: A conventional (Non-government-insured or - guaranteed loan, up to \$207,000) mortgage to purchase an ENERGY STAR Home that allows the borrower's allowable income and debt ratio to increase 2 percentage points to qualify for financing.
- G. Energy Improvement Mortgage: A conventional (Non-government-insured or - guaranteed loan, up to \$207,000) mortgage to purchase an ENERGY STAR Home that allows the appraised value of the home to be based on the market value plus the Energy Efficiency Value Increment which is the lower of the actual cost of energy efficiency upgrades or the net present value of the expected energy savings due to the upgrades.

III. Product Qualification and Review for the ENERGY STAR Logo

- A. (1) A mortgage product must meet the following specifications to qualify as an ENERGY STAR Mortgage. The terms of the Mortgage are designed to significantly reduce or offset the additional closing cost associated with the purchase of an ENERGY STAR Home (i.e. payment of a HERS rating, additional down payment, closing cost fees based on percentage value of the home). These closing cost offsets may include a full or partial waiver in fees, reduction in down payment, cash-back payment by the Partner, or any other means to reduce or eliminate these costs. The present value of an interest rate reduction may also be used to determine the closing cost offsets.
- (2) The Mortgage shall be made available only to finance ENERGY STAR Homes.
- B. The Partner shall submit proposed products (s) to EPA program manager for

review. After EPA and the Partner determine that the loan products are consistent with Section III .A. above, it shall be considered an ENERGY STAR Mortgage. The Partner may begin to associate the ENERGY STAR Logo and name with that product.

C. The Partner may submit a written notice to modify an ENERGY STAR Mortgage, consistent with terms of this MOU, to the EPA program manager. Any modification of the mortgage product by the Partner will constitute a new application for its designation as an ENERGY STAR mortgage, and shall be reviewed in accordance of the specifications of Section III. A.

D. The EPA program manager shall review modifications to ENERGY STAR mortgages within 10 working days of receipt of request for modifications by the Partner.

IV. Effective Date of MOU and Duration

A. The effective date of this MOU shall be when signed by both the EPA and the Partner.

B. Both parties agree that the Partner may begin to market ENERGY STAR Mortgages immediately upon execution of this agreement, and satisfaction of the requirements in Section III above.

C. Both parties agree that this agreement can be terminated by the EPA ENERGY STAR Partner or EPA with 30 days notice to the other Party, for any reason, with no penalty. However, both parties agree that termination for non-compliance would only occur in accordance with the procedures below.

V. ENERGY STAR Partner's Responsibilities

A. The EPA ENERGY STAR Partner agrees to appoint a responsible representative of the company as liaison with EPA for the EPA ENERGY STAR Financing Program and to notify EPA within one month of any changes in liaison designation.

B. The ENERGY STAR Partner shall provide consumers ENERGY STAR Mortgages that finance ENERGY STAR Homes through Partner's retail operations.

C. The ENERGY STAR Partner shall provide Energy Efficient Mortgages (EEMS) and Energy Improvement Mortgages (EIMS) allowed under FHA, Fannie Mae and Freddie Mac guidelines

D. The Partner agrees to market ENERGY STAR Mortgages to home buyers and to builders that participate in EPA's ENERGY STAR Home Program.

E. The Partner shall strive to make ENERGY STAR Mortgages highly competitive and attractive to home buyers.

F. Customer Education.

1. Product Literature:

The Partner will include in its promotional literature information about the ENERGY STAR Financing Program general information regarding the financial and environmental benefits of energy efficiency. This information should include a description of the ENERGY STAR Home Program and the pollution prevented by purchasing a more efficient home.

2. Logo Usage:

To help consumers become familiar with the ENERGY STAR Financing Program, the Partner shall place the ENERGY STAR logo on its loan applications (where possible), brochures, promotional literature, and advertisements for loans meeting the terms of this MOU, consistent with terms of Section VII.

H. To assist EPA's efforts to promote the ENERGY STAR Financing Program, the Partner agrees to attempt to identify customers to EPA who have profited from the program and are willing to share information about their experience with the EPA and others. The Partner also agrees to identify employees to EPA who have contributed to the program's success.

I. The EPA ENERGY STAR Partner agrees to provide information about the ENERGY STAR Finance and Homes Program to all of its employees whose jobs are relevant to the development, marketing, promotion, and servicing of ENERGY STAR Mortgages.

J. To assist the EPA in carrying out the ENERGY STAR Finance Program, the Partner shall collect and provide to the EPA, if reasonable, information on the efficiency of new homes, and retro-fits on the homes financed by ENERGY STAR Mortgages, and other information that may be requested by EPA to enhance its program.

K. The Partner agrees to work cooperatively with EPA to track ENERGY STAR Mortgages so that their performance can be evaluated.

VI. EPA'S Responsibilities

A. EPA agrees to designate a single liaison for the EPA ENERGY STAR Mortgage Finance Program, and to notify the Partner within one month if there is any changes in liaison designation.

B. EPA agrees to provide information on the ENERGY STAR Finance Program to potential and current ENERGY STAR Builders.

C. EPA agrees to keep the Partner informed about which home builders are ENERGY STAR partners.

D. EPA agrees to provide information about and promote energy-efficient homes, and equipment, and to inform consumers about the EPA ENERGY STAR Finance Program and EPA ENERGY STAR Logo by, among other things, writing articles, and/or cooperating with the news media and other means, where appropriate.

E. EPA agrees to provide the Partner with recognition for its public service in protecting the environment and providing this and other program information to appropriate news media sources for publication.

F. EPA agrees to work with the Partner to coordinate the placement of advertisements providing information about energy efficient homes and the ENERGY STAR Finance Program and to elevate consumers recognition of the EPA ENERGY STAR Logo and its significance.

VII. Use of the EPA ENERGY STAR Logo

A. EPA agrees to allow the Partner to use the ENERGY STAR Logo in the Partner's advertisements, business correspondence, in accordance with the EPA ENERGY STAR Logo use provisions directly below and in the attached ENERGY STAR Logo use guidelines.

B. EPA agrees to loan to the Partner, at no charge, materials from which the Partner can reproduce the ENERGY STAR Logo.

C. The Partner agrees to associate the EPA ENERGY STAR Logo and ENERGY STAR name with ENERGY STAR Mortgages that qualify under the terms and conditions of Section III of the MOU.

D. The Partner shall not use the logo in a manner that directly or otherwise implies EPA endorsement of the Partner or of the Partners's products.

E. The Partner agrees not to alter the EPA ENERGY STAR Logo.

F. When the EPA ENERGY STAR Logo is used in brochures, applications, and other promotional materials, the Partner agrees that it shall be accompanied by the following statement: "As an ENERGY STAR Financing Partner, [Name of Lender] has agreed to offer special mortgage terms for the purchase of homes that meet the ENERGY STAR guidelines for energy efficiency and meet the applicable [Name of Lender] underwriting and credit requirements". This statement may be included within the text of a document, or where other explanatory information is found.

G. If either EPA or the Partner terminates this Agreement, Partner will no longer be entitled to apply the EPA ENERGY STAR Logo to its mortgage loans, applications, and advertising, and the Partner will no longer make reference to the EPA ENERGY STAR Program so as to convey continuing involvement in the program.

VIII. Conflict Resolution

A. Each party agrees to use good faith as a general principle for resolving conflicts under the EPA ENERGY STAR Program.

B. Both parties agree to informally notify each other if any problems or issues arise and to work together to provide maximum public confidence in the program.

C. If the ENERGY STAR Partner believes that EPA is not meeting all of its commitments, the Partner agrees to formally notify EPA in writing. EPA agrees to respond in writing within 20 business days of receiving the ENERGY STAR Partners's letter. At that time, EPA will do one of the following:

- (a) undertake the corrective actions sought by the partner, or
- (b) explain why such corrective actions can not be undertaken

D. Procedure for Addressing Non-compliance with MOU.

1. If EPA believes that the Partner is not meeting its commitments, then EPA will immediately notify the Partner and attempt to address and resolve the problem informally.

2. If these informal discussions do not produce a mutually agreeable resolution, EPA shall notify the Partner in writing that the Partner shall be terminated from the program unless it undertakes the specific corrective actions sought by EPA. The Partners agrees to reply to EPA in writing within 20 business days of receiving EPA's letter. At that time, the Partner shall agree to do one of the following: (a) undertake in a timely and effective manner, the corrective actions sought by EPA; or (b) voluntarily terminate this agreement. If the Partner does not respond to EPA's letter within 20 business days, or does not agree to either (a) or (b), then this agreement is hereby terminated.

IX. Miscellaneous

A. Freedom of Information Act and Confidential Business Information

Both parties understand that information provided by the Partner to EPA will be treated pursuant to EPA's public information regulations under the Code of Federal Regulations (CFR) at 40 CFR, Part Two.

* * * * *

The undersigned, hereby execute this Memorandum of Understanding on behalf of their Parties. The signer of this agreement affirms that she/he has the authority to commit Partner to participation in the ENERGY STAR Finance Program.

The ENERGY STAR Homes Program

The U.S. Department of Energy (DOE) and EPA work together with industry to promote ENERGY STAR as a smart consumer decision for products, building upgrades, and new homes that save money and bring environmental benefits.

The ENERGY STAR Homes Program, in particular, works with builders to provide homes that are at least 30% more efficient than the US Model Energy Code (MEC). As builders and developers incorporate better building practices, the ENERGY STAR Homes Program provides them with a brand name label and preferred mortgage financing to distinguish their products in the marketplace.

As at early May 1998, the ENERGY STAR Homes Program boasts more than 500 Builder and Developer Partners across the United States, with commitments to build more than 20,000 ENERGY STAR Homes in the next 12 months.

EPA's 1997 goal was 500 new Energy Star homes, which was exceeded by more than 60%. The 1998 goal of 5,000 new homes will likely be exceeded within the first half of 1998 because builders have already committed to building 20,000 ENERGY STAR Homes in 1998. EPA's goal is 100 percent market transformation by 2012.

Note that in the USA, approximately 1 million new homes are built each year (excluding manufactured housing). The 1998 commitment by builders represents a 2% penetration within a short time and the rapid growth has encouraged EPA to see its 2012 target as achievable.

Home buyer incentives for energy star

Why Should I Buy an Energy Star Home?

The Benefits of Owning an Energy Efficient ENERGY STAR home

Improved Comfort

ENERGY STAR Homes with additional insulation and advanced windows feel more comfortable because wall surface temperatures are warmer in winter and cooler in summer. Tighter homes with efficient windows will not experience annoying drafts and airborne dust.

ENERGY STAR Homes can be much quieter when builders provide better insulated walls and ducts and properly sized mechanical systems.

ENERGY STAR Homes are tested for air leakage, homeowners are assured adequate ventilation is being provided. Homes with better sealed ducts will be much less exposed to potential sources of indoor air pollutants, dust, and radon that can enter through leaks in attics, basements, and garages.

Quality Construction

ENERGY STAR Homes are more tightly sealed. To achieve this, ENERGY STAR Home Builders pay greater attention to construction details. Where provided, high-efficiency equipment, such as ENERGY STAR air conditioners, heat pumps, and furnaces may include quality features beyond improved performance, such as higher grade heat exchangers, fans, motors, and longer-term warranties.

Strong Position for High Resale Value

ENERGY STAR Homes are more likely to boast up-to-date building technologies and therefore offer less risk of technology obsolescence. ENERGY STAR Homes also may be available with high efficiency appliances and lighting. In addition, ENERGY STAR Homes can develop a long track record of low utility bills. These benefits can translate into higher resale values when it's time to sell.

Easy Access to Preferred Mortgage Financing

National and local financing products currently being introduced or under development can make it easier for you to qualify for ENERGY STAR Homes. In some cases, loan origination fees may be reduced and discounted interest rates made available. Ask your lender about ENERGY STAR Mortgages

Experience These Benefits and Help the Environment Too!

It's a great feeling to know that a smart consumer decision can have such an important impact on helping the environment. American household energy use contributes to air pollution, including 20 percent of all U.S. carbon dioxide emissions. Owning an ENERGY STAR Home helps reduce air pollution.

BUILDER Agreement

EPA ENERGY STAR Homes Program:
Memorandum of Understanding between
The United States Environmental Protection Agency
and

_____ (Builder)

I. Common Agreements and Principles

- A. This is a voluntary agreement between _____ ("Partner") and the United States Environmental Protection Agency (EPA), by which the Partner joins EPA's ENERGY STAR« Homes Program.
- B. Partner and EPA agree that the primary purpose of this program is to demonstrate that energy efficient homes can improve builder profitability, improve home quality and home owner comfort, lower energy demand, reduce air-pollution; and enhance the national economy.

II. Definitions

- A. Blower Door Test: Test method for determining air infiltration through pressurisation of the building. Generally, air changes per hour (ACH) are measured at a pressure of 50 Pascals.
- B. Council of American Building Officials' Model Energy Code (CABO MEC): A code intended to regulate the design of building envelopes for adequate thermal resistance and low air leakage and the design and selection of mechanical, electrical, service water-heating and illumination systems and equipment. Adherence to the code enables effective use of energy in new building construction.
- C. Department of Energy's (DOE) Voluntary Residential Energy Efficiency Rating Guidelines: The Energy Policy Act of 1992 required the Department of Energy to develop uniform, voluntary guidelines for home energy rating system programs. The Home Energy Rating Systems (HERS) Council was formed to address the issues involved in drafting the voluntary guidelines. DOE Docket No. EE-RM-95-202 defines the Five Star home threshold as consuming 30% less energy than the reference house, which meets the 1993 Model Energy Code (MEC) requirements.

D. Profitable Upgrades: Energy efficiency upgrades that provide larger returns on the investment made by the Partner (often termed the "costs of change") than the sum of the added first costs and construction loan carry-costs required for any such modifications. For example, the ENERGY STAR Home, accounting for enhanced market differentiation (quick sale), higher value added, reduced call-backs (better quality), innovative mortgage financing (more affordable), and lower utility bills, is anticipated to provide a better overall financial return to the builder than producing and marketing a similar home without the ENERGY STAR« Home upgrades.

III. Entry into Force and Duration

- A. This Memorandum of Understanding (MOU) enters into force when signed by both EPA and Partner.
- B. Both parties agree that this agreement can be terminated by EPA ENERGY STAR« Partner or EPA at any time, and for any reason, with no penalty or liability to either party.

IV. Program Performance Target

- A. ENERGY STAR« Homes shall use thirty percent less energy than that used in the DOE Voluntary Residential Energy Efficiency Rating Guidelines' Reference House. According to these Guidelines, this level would achieve a Five Star rating. The Guidelines allow the ENERGY STAR« Home energy performance target to be met through any combination of:
 - 1. envelope upgraded beyond the MEC,
 - 2. controlled air infiltration,
 - 3. upgraded heating and air conditioning equipment,
 - 4. upgraded water heating equipment.
- B. ENERGY STAR« Homes shall maintain or improve indoor air quality as per American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Standard 62-1989 or ASHRAE Standard 90.2-1993.
- C. In addition, EPA encourages the Partner to equip ENERGY STAR« Homes with energy efficient lighting and appliances or to offer such equipment as upgrades if the Partner offers upgrades for appliances or lighting.

V. EPA Responsibilities

- A. EPA agrees to conduct a kick-off meeting or telephone conference with Partner.

- B. EPA agrees to designate a Project Manager to act as primary liaison with Partner.
- C. EPA shall provide sources of technical support, at the Partner's request, for energy efficiency upgrade recommendations that can meet program specifications. It shall be up to the sole discretion of the Partner which technical options the Partner shall adopt in order to meet the program performance target.
- D. EPA shall provide Partner copies of consumer outreach information that explain the benefits of buying energy efficient homes.
- E. EPA shall assist in Partner's quality control program by providing sources of blower door and duct leakage testing services as well as energy bill warranty providers.
- F. EPA agrees to provide the Partner with product information concerning cost-effective energy efficient lighting and appliances. At the Partner's request, EPA shall provide examples of cost analyses to aid the Partner in determining the value of energy efficient products.

VI. Partner Responsibilities

- A. The Partner agrees to designate a Project Manager who will take responsibility for coordinating the joint effort within one month of the date of this agreement. Partner will commit the necessary internal organisational resources to complete this agreement.
- B. Partner agrees to participate in a kick-off meeting or telephone conference. Partner agrees that all parts of its organisation with a stake in the ENERGY STAR« Home Program will be represented by a senior level representative at the meeting.
- C. Partner agrees to construct home(s) that meet the performance target as described in Section IV above. In cases where Partner builds both standard and ENERGY STAR« Homes, Partner agrees to identify appropriate standard homes as "control" homes for comparative evaluation.
- D. In cases where the Partner supplies the homes with lighting and/or appliances, Partner agrees to consider offering cost effective energy efficient upgrades of these products in the selected homes (e.g. refrigerators, clothes washers and dryers, and dishwashers). If Partner offers these appliances as upgrades, Partner agrees to consider ENERGY STAR« appliances where available and energy efficient products where not.

E. Where practical, the Partner will permit EPA access to the homes during construction and will assist EPA in gathering utility billing data and additional information useful for evaluation of performance, comfort and profitability for two years after occupancy.

VII. Use of the EPA ENERGY STAR« Logo

- A. EPA agrees to loan Partner, at no charge, materials from which Partner can reproduce the ENERGY STAR« logo.
- B. It is the responsibility of the Partner to associate EPA, the EPA ENERGY STAR« logo, and the EPA ENERGY STAR« Program only with those specific homes that qualify under the terms and conditions of this MOU.
- C. When the EPA ENERGY STAR« logo is used on sales materials for ENERGY STAR« Homes, Partner agrees that it shall be accompanied by the following statement: "As an ENERGY STAR« Partner, _____ (Builder) has determined that this home meets the ENERGY STAR« guidelines for energy efficiency."
- D. Partner shall not use the logo in a manner that might imply EPA endorsement of the Partner or of Partner's products.
- E. EPA ENERGY STAR« Partner agrees not to alter the EPA ENERGY STAR« logo.
- F. If either EPA or Partner terminates this Agreement, Partner will no longer be entitled to associate the EPA ENERGY STAR« logo with newly constructed homes, and will no longer make reference to the EPA ENERGY STAR« Program so as to imply continuing involvement in the program.

VIII. Conflict Resolution

- A. Each party agrees to exercise good faith as a general principle for resolving conflicts under the EPA ENERGY STAR« Program.
- B. Both parties agree to informally notify each other if any problems or conflicts arise and to work together to provide maximum public confidence in the program.
- C. Procedure for Addressing Non-compliant Homes:
1. If EPA receives information that one or more homes certified as

ENERGY STAR« compliant do not meet all of the conditions of this MOU, then EPA will immediately notify Partner and attempt to address and resolve the problem informally.

2. If these informal discussions do not produce a mutually agreeable resolution, EPA shall notify Partner in writing that the agreement shall be terminated unless the Partner undertakes the specific corrective actions sought by EPA. Partner agrees to reply to EPA in writing within 20 business days of receiving EPA's letter. At that time, Partner shall agree to do one of the following: (a) undertake in a timely and effective manner, the corrective actions sought by EPA; or (b) voluntarily terminate this agreement. If Partner does not respond to EPA's letter within 20 business days, or does not agree to either (a) or (b), then this agreement is terminated.

D. If EPA ENERGY STAR« Partner believes that EPA is not meeting all of its commitments, Partner agrees to formally notify EPA in writing. EPA agrees to respond in writing within 20 business days of receiving ENERGY STAR« Partner's letter. At that time, EPA will do one of the following: (a) undertake the corrective actions sought by Partner, or (b) explain why such corrective actions will not be undertaken.

IX. Freedom of Information Act and Confidential Business Information

Both parties understand that information provided by Partner to EPA will be treated in accordance with EPA's public information regulations under 40 Code of Federal Regulations, Part Two.

ENERGY STAR« Homes MOU - 37680 -
v2.1

11/97

As representatives of EPA and _____ (Builder), we, the undersigned, do hereby execute this Memorandum of Understanding on the latter of the dates indicated below.

For the U.S. Environmental Protection Agency (EPA):

Signature: _____ Date: _____

Name: Paul Stolpman, Director

Title: Office of Atmospheric Programs

For _____
(Builder):

Signature: _____ Date: _____

Name: _____ Phone: _____

Title: _____ Fax: _____

Address:

E-Mail:

Web Site:

Number of Homes Built Per Year:

Who referred you to ENERGY STAR« Homes:

ENERGY STAR Homes Developer MOU

EPA ENERGY STAR HOMES PROGRAM: MEMORANDUM OF UNDERSTANDING BETWEEN THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY AND

I. Common Agreements and Principles

A. This is a voluntary agreement between _____ (“Partner”) and the United States Environmental Protection Agency (EPA), by which the Partner joins EPA’s ENERGY STAR Homes Program as a Home Developer. This Memorandum of Understanding (MOU) shall apply to the (name of) Residential Home Development.

B. Partner and EPA agree that the primary purpose of this program is to demonstrate that energy efficient homes can improve builder and developer profitability, improve home quality and home owner comfort, lower energy demand, reduce air-pollution; and enhance the national economy.

II. Definitions

A. Residential Home Development: For the purposes of this MOU, a residential home development is a real estate undertaking which includes lots on which residential homes will be constructed by either a single builder or several builders.

B. ENERGY STAR Home: New home that meets the Environmental Protection Agency’s criteria as defined in the EPA’s ENERGY STAR Homes Builder Memorandum of Understanding.

III. Effective Date and Duration of MOU

A. This Memorandum of Understanding is effective when signed by both EPA and Partner.

B. Both parties agree that this agreement can be terminated by EPA ENERGY STAR Homes Partner or EPA at any time, for any reason, with no penalty or liability to either party.

C. This agreement shall be applied to the (enter name of) Development for the duration of the project’s development, marketing, and evaluation efforts.

IV. ENERGY STAR Homes Developer Partner’s Responsibilities

A. Partner agrees to one of the following options (check one):

- “ 1. All builders constructing homes shall offer ENERGY STAR Homes as an upgrade to their standard home;
- “ 2. ENERGY STAR Homes are included as standard construction on percent (Partner enters number) of homes; or
- “ 3. Builders are selected on the basis of achieving the maximum number of completed ENERGY STAR Homes.

B. Partner agrees that ENERGY STAR Home Development shall incorporate the following, to the extent practical, into the design process:

1. access to public transportation;
2. minimal impact to the environmental quality of the area;
3. energy efficient indoor and outdoor lighting;
4. access to recycling facility, and;
5. use of ENERGY STAR Transformers.

C. The Partner agrees to designate a Project Manager who will take responsibility for coordinating the joint effort between Partner and EPA within one month of the date of this agreement. Partner will commit the necessary internal organizational resources to complete this agreement.

D. Partner agrees to participate in a kick-off meeting or telephone conference. Partner agrees that all parts of its organization with a stake in the ENERGY STAR Home Program will be represented by a senior level representative at the meeting.

E. ENERGY STAR Homes Developer Partner agrees to cooperate with EPA in publicizing the environmental benefits of energy-efficient home building and in recruiting home builders as participants in the ENERGY STAR Homes Program (ENERGY STAR Homes Builder Partners), and to assist those builders in achieving the goals of the ENERGY STAR Homes Program. Partner agrees to consider:

1. distributing EPA-supplied promotional materials;
2. using EPA-supplied visual aids as part of presentations to prospective ENERGY STAR Homes Partners;
3. using the ENERGY STAR Homes Program logo on ENERGY STAR Homes Developer Partner's own stationery, literature binders, and other non-product specific literature and marketing media (see restrictions in paragraph VI.B)

F. ENERGY STAR Homes Developer Partner agrees to promptly inform EPA of interest expressed by prospective ENERGY STAR Homes Partners to allow further contact by EPA.

G. Partner will permit EPA access to the development during construction of the homes and will assist EPA, to the extent practical, in gathering utility billing data and additional information useful for evaluation of performance, comfort and profitability of ENERGY STAR Homes.

H. Partner agrees to hold a final project assessment meeting with EPA to discuss the results and lessons learned from the project.

V. EPA Responsibilities

A. EPA agrees to conduct a kick-off meeting or telephone conference with Partner.

B. EPA agrees to designate a Project Manager to act as primary liaison with Partner.

C. EPA agrees to provide ENERGY STAR Homes Developer Partner with recognition for its public service in protecting the environment by:

1. publishing articles and performing analyses about the pollution prevented by participants,
2. assisting in at least one media event each year,
3. publishing articles describing the ENERGY STAR Homes Program, and
4. creating public service advertisements that raise awareness of the program as a whole.

D. EPA agrees to provide technical support to builders to facilitate compliance with ENERGY STAR Homes guidelines.

E. EPA agrees to provide informational and promotional materials to assist ENERGY STAR Homes Developer Partner in its efforts to promote the use of high quality energy-efficient housing, such as:

1. publications (brochures, newsletter, etc.) which explain the environmental benefit of energy-efficient housing and the ENERGY STAR Homes Program;
2. information on eligibility criteria for participation in the program as a ENERGY STAR Homes Partner;
3. a blank copy of the ENERGY STAR Homes Memorandum of Understanding;
4. the ENERGY STAR logo to identify the Partner as a participant in the program, that the Partner may use on letterhead, business cards, literature binders, and on other materials, subject to the restrictions laid forth in the Partner logo guidelines and in Section VI C. of this MOU;
5. sample advertisements.

F. EPA agrees to provide information on the environmental benefits of energy-efficient home building that Partner may adapt for use in demonstration kits or centers and in its marketing literature.

G. EPA agrees to offer to ENERGY STAR Homes Developer Partner a list of all current ENERGY STAR Homes Developer and Builder Partners, which will be updated on a monthly basis.

VI. Use of the EPA Energy Star Logo

A. EPA agrees to loan ENERGY STAR Homes Developer Partner, at no charge, materials from which Partner can reproduce the ENERGY STAR logo.

B. It is the responsibility of the ENERGY STAR Homes Developer Partner to associate EPA, the EPA Energy Star logo, and the EPA ENERGY STAR Program only with those specific developments that qualify under the terms and conditions of this MOU. To the extent that (development name) does not include 100% ENERGY STAR Homes, Partner shall not directly state or otherwise imply that all homes within said Development are ENERGY STAR Homes.

C. Partner shall not use the logo in a manner that directly or otherwise implies the EPA endorsement of the Partner or of Partner's products.

D. EPA ENERGY STAR Homes Developer Partner agrees not to alter the EPA Energy Star logo.

E. If either EPA or Partner terminates this Agreement, Partner will no longer be entitled to associate the EPA Energy Star logo to new home developments, and will no longer make reference to the EPA ® ENERGY STAR Program so as to imply continuing involvement in the program.

VII. Conflict Resolution

A. Each party agrees to exercise good faith as a general principle for resolving conflicts under the EPA ENERGY STAR Program.

B. Both parties agree to informally notify each other if any problems or issues arise and to work together to provide maximum public confidence in the program.

C. Procedure for Addressing Noncompliant Products.

1. If EPA receives information that one or more homes within Partner's development that were certified as ENERGY STAR compliant do not meet all of the conditions of the ENERGY STAR Home Program, then EPA will notify Partner and attempt to address and resolve the problem informally.

2. If these informal discussions do not produce a mutually agreeable resolution, EPA shall notify Partner in writing that the agreement shall be terminated unless the Partner undertakes the specific corrective actions sought by EPA. Partner agrees to reply to EPA in writing within 20 business days of receiving EPA's letter. At that time, Partner shall agree to do one of the following: (a) undertake in a timely and effective manner, the corrective actions sought by EPA; or (b) voluntarily terminate this agreement. If Partner does not respond to EPA's letter within 20 business days, or does not agree to either (a) or (b), then this agreement is hereby terminated.

D. If EPA ENERGY STAR Partner believes that EPA is not meeting all of its commitments, Partner agrees to formally notify EPA in writing. EPA agrees to respond in writing within 20 business days of receiving ENERGY STAR Partner's letter. At that time, EPA will do one of the following: (a) undertake the corrective actions sought by Partner, or (b) explain why such corrective actions will not be undertaken, or (c) terminate this MOU.

VIII. Freedom of Information Act and Confidential Business Information

Both parties understand that information provided by Partner to EPA will be treated in accordance with EPA's public information regulations under 40 Code of Federal Regulations, Part Two.

As representatives of EPA and _____ (developer), we, the undersigned, do hereby execute this Memorandum of Understanding on the latter of the dates indicated below.