

**7. CLEAN AIR AND ENERGY EFFICIENCY INCENTIVES PROGRAMME:  
ASSISTANCE TO LOW INCOME HOME OWNERS AND  
OTHER ISSUES**

RR 9256

<b>Officer responsible</b> Corporate Services Manager	<b>Author</b> Michael Gaudin, Dr Leonid Itskovich, Terence Moody
Corporate Plan Output: Environmental Health Policy Vol. II page 7.2.text12	

The purpose of this report is to present for the Committee's consideration options for increasing the uptake of the energy efficiency component of the Clean Air and Energy Efficiency Programme, and to provide further assistance to low income home owners who are unable to meet the cost of conversion to approved clean air heating appliances and energy efficiency measures. The report also considers other enhancements to the existing programme.

**BACKGROUND**

Following submissions from citizens on the Annual Plan, the Council decided in 1997 to allocate a sum of \$2.4M over five years to encourage householders to replace open fireplaces and other polluting domestic heaters with cleaner heating alternatives. Provision was subsequently made in the Annual Plan and Budget for the following sums to be made available.

**Table 1**

1997/98	\$500,000
1998/99	\$500,000
1999/2000	\$670,000
2000/01	\$670,000
2001/02	\$80,000

The Council, after considering the information provided by the Canterbury Regional Council as part of its Air Plan preparation, decided that incentives should be provided to householders to close off or remove open fireplaces or to remove other coal burning appliances. These two home heating sources accounted for in excess of half the PM10 emitted on a typical winter night. An experienced consultancy firm was contracted to prepare a detailed implementation plan based on the objectives to encourage householders to replace their open fireplaces and coal burning appliances with cleaner heating appliances and to install measures that would make their homes more energy efficient. The first objective was to be funded from the fund above and the second from money from the Energy Saver Fund (ESF) administered by the Energy Efficiency and Conservation Authority (EECA).

The programme was seen to be a community initiative, led by the Christchurch City Council, but largely operated in the community by the community. It was considered important that retailers and installers of energy equipment be involved. Not only were there administrative advantages in this arrangement it also enabled wider publicity to be given from more sources with minimal cost to the programme.

On the basis of the work undertaken by the consultant the total eligible market was estimated to be about 12,000 households (excluding government owned premises). It was determined by the consultant, with the level of incentives suggested, that about 60% of the target market, or about 7,000 households (willing target market), would participate.

For current programme status refer to attachments.

#### **LOW INCOME HOMEOWNERS**

At its meeting on 22 July 1998 the Council resolved that *officers prepare a report for consideration of an increase in the level of grants/incentives... available to low income home owners unable to meet the cost of conversion to approved gas/wood burners and other energy efficiency measures.*

With the view that the existing programme may not sufficiently support the low income home owners the Council decided to consider options for allocation of further assistance. Additional funding options are presented for consideration and summarized in Table A of the attachments.

#### **SUPPLEMENTARY PROGRAMME OF ASSISTANCE TO LOW INCOME HOME OWNERS: CHANGE OF OBJECTIVE**

The main objective of the existing clean air and energy efficiency programme is reducing air pollution in Christchurch.

A supplementary programme for low income home owners will have a different objective of a more social nature: providing them with an extended special monetary assistance to meet capital costs of conversion from polluting and inefficient forms of home heating to cleaner and efficient ones, as well as to achieve healthier living conditions.

#### **BUDGET ELECTRIC APPLIANCE OPTION**

The options presented below and in Table A (Attachments) refer to the installation of a budget electric appliance. The Clean Air and Energy Efficiency Programme does have budget cost options available. For example, a 2.6 kW thermostatically controlled electric heater with permanent dedicated wiring can be installed for around \$440.

Costs to permanently disable an open fireplace, including sealing and chimney cap, can average around \$135.

This means that a homeowner would have to pay \$275 of the total cost of conversion (\$575), as \$300 is covered by the grant available under the existing programme. Thus, the existing grant covers 52% of the conversion costs.

## **SUPPLEMENTARY FUNDING OPTIONS**

### **Option 1**

The Clean Air and Energy Efficiency Incentives Programme's present targets are being achieved and no further assistance is required. The present incentives are up to \$500 grant towards the installation of a clean air appliance plus certain grants towards home insulation (that constitute 27% to 50 % of installed costs of insulation).

### **Option 2**

In addition to the existing level of financial incentives provide financial assistance for the costs of disabling the open fire or coal burner (a further grant of \$135 per household).

### **Option 3**

In addition to the existing level of financial incentives provide financial assistance for the costs of disabling the open fire or coal burner (for full amount but not more than a certain limit) and increase the level of grant for energy efficiency measures to 80% of installed costs.

### **Option 4**

In addition to the existing level of financial incentives provide financial assistance for the costs of disabling the open fire or coal burner and increase the level of grant for energy efficiency measures to 100% of installed costs.

### **Option 5**

Provide 100% financial assistance for the costs of disabling the open fire or coal burner, installation of a budget cost heating appliance and installation of energy efficiency measures.

### **Option 6**

Provide 100% financial assistance for the costs of disabling the open fire or coal burner, installation of a budget electric heating appliance and installation of energy efficiency measures, up to certain maximum amounts.

### **Option 7**

Provide 100% financial assistance for the costs of disabling the open fire or coal burner, 80% of the installed cost of a budget electric heating appliance and 100% assistance for installation of energy efficiency measures, up to certain maximum amounts. If participants wish to choose any other appliance they meet the extra costs.

## **HOW MANY LOW INCOME HOME OWNERS?**

Statistical analysis of the completed installations showed that 6% of all home owners participated in the programme to date were from home owners with annual income less than \$20,000, and another 6% home owners were landlords providing (probably) housing for low income householders.

Statistical information on how many low income home owners have open fires or coal burners is imprecise. A further uncertainty is introduced because there it is difficult to estimate how many of such home owners would take up the offer of financial assistance to replace such heaters and to make their houses more energy efficient. Given these uncertainties and statistical information available, the estimated number of eligible households ranges between 1200 to 3000. All calculations of funds required are based on a likely number of 2000 potential participants.

#### **ELIGIBILITY CRITERIA**

Consideration by the Committee of the report at the September 1998 meeting concluded that if the Council decides to offer a supplementary assistance programme targeting low income home owners, then the home owner income eligibility criterion for this assistance should be whether the home owner has a community services card.

It was further proposed that no retrospective payments be made to those who have already participated in the incentives programme.

#### **ADDITIONAL ADMINISTRATION COSTS**

The supplementary programme monetary expenditure will require separate data processing, monitoring and checking systems resulting in a likely 35-50% increase in the existing workload of the programme administrator. It is therefore proposed that the budget include an additional administration expenditure of 5% of any additional funds provided. Figures in Table A, Attachments, include this administration cost.

#### **RECOMMENDED OPTION**

From the Council's point of view the aim of the project is to improve the air quality in Christchurch by reducing the amount of particulate discharged into the atmosphere by home heating. This is best achieved by improving home insulation which enables the installation of smaller heating appliances and burning lesser amounts of fuel.

Assistance of less than 100% for the installation of insulation is likely to result in rejection of energy efficiency measures by some low income home owners.

International experience in the implementation of similar energy efficiency programmes for low income householders suggests that best results can be achieved at 100% assistance. For example, in the UK the uptake of a home insulation programme that provided for a 90% subsidy was sluggish and declining for a number of years until in 1993 the householder contribution of 16 pounds was withdrawn which immediately resulted in an increase of the uptake rate.

On the other hand, it is worth remembering that improving house insulation has a pay back to the householder in reduced heating costs, therefore it is reasonable to expect home owners to contribute towards the clean air and insulation package (towards the installation of a new heater rather than insulation). By contributing, participants obtain a sense of ownership and involvement in a community venture.

On this basis Option 7 is recommended as in this case low income home owners would be able to fully insulate their home and install a budget electrical appliance in their main living area at a cost of around \$88.00. This can be repaid from reduced energy bills within one winter month at a significant improvement to living conditions in the

house. If householders choose an alternative more expensive heating appliance, such as a more expensive electric heater or a nightstore heater, solid fuel burner or gas appliance, they would receive the same grant allocation as for 80% of the budget electric heater, but have to meet the extra costs themselves. If the householders choose alternative more expensive insulation products they also have to meet the extra costs themselves.

The target market would be those who:

- (a) are homeowners;
- (b) are current community services card holders; and
- (c) act on the advice of the Council's Energy Adviser.

Maximum amounts granted for an installation using Option 7 are those indicated in Table 2.

**Table 2. Maximum Amounts Granted**

Thermostatically controlled electric heater	\$279.00
Dedicated fixed wiring installation	\$160.00
Seal open fire	\$135.00
Ceiling insulation at no more than	\$6.50 per m <sup>2</sup>
Underfloor insulation at no more than	\$6.50 per m <sup>2</sup>

#### **ADDITIONAL FUNDING REQUIRED FOR ASSISTANCE TO LOW INCOME HOMEOWNERS**

A supplementary programme to increase "the level of grants/incentives... available to low income home owners unable to meet the cost of conversion to approved gas/wood burners and other energy efficiency measures" budget allocation over a three-year period based on an estimated first year uptake of 50%, second year uptake of 40% with the remaining 10% in the final year and on 2000 participants as detailed in the options set out in Table A of the attachments, is summarised in Table 3 below.

**Table 3**

<b>Financial year</b>	<b>Funds required</b>
1999/2000	\$576,000
2000/2001	\$461,000
2001/2002	\$115,000
<b>Total</b>	<b>\$1,152,000</b>

## **WAYS AND MEANS OF SECURING A SATISFACTORY UPTAKE OF THE INSULATION PROGRAMME**

At its meeting on 22 July 1998 the Council resolved that *officers prepare a report for consideration of purchase of suitable older homes for conversion to energy efficient display homes.*

At its meeting on 14 September 1998 the Strategy and Resources Committee decided that *staff report to the December meeting of the Committee on ways and means of securing a satisfactory uptake of the insulation programme... for the general public.*

### **SHOW HOME AND ENERGY ADVICE SERVICE**

#### **Show Home**

A Show Home, if arranged and operated properly, would not only contribute to an increase in uptake of the insulation programme, both for the general public and low income home owners, but also increase awareness in the community of the benefits of energy efficiency. For instance, very few people are aware of the availability, features and benefits of underfloor insulation. Samples of such insulation could be displayed at the show home (installed under the existing timber floor, covered by a sheet of glass and lit up). Other energy efficiency measures (both subsidized by the programme and not subsidized) would be demonstrated at the show home, as well as hot and cold water conservation measures.

Southpower have had extensive experience of operating four energy efficiency show homes over the recent years. Each show home operated for a period of several months, usually in autumn-winter. The latest show home attracted 11,500 visitors over 5 months, the previous home had 35,000 visitors over a 4-month period. In some days there were more than 500 people through from 10 am to 5 pm. The latest home has been sold so currently there is no energy efficiency show home in Christchurch.

The type of house to convert to a show home should be an average home corresponding to the target market of older houses with open fires and no thermal insulation. Open hours should include Saturday and Sunday.

What period of time should the show home operate for? Taking into consideration that the Clean Air and Energy Efficiency Programme is planned till the year 2002, it is recommended that the show home operates for at least two years, with a review after the first year of its operation.

The show home can also be used for demonstration of water conservation measures.

Costs of purchasing, converting and operating a Show Home are detailed in the Attachments and shown in Table 4.

It is recommended that the capital expenditure for the purchase and conversion of the show home be met from the Council's energy efficiency projects budget for the 1998/99 financial year. After the show home fulfils its purpose and is sold, the revenue from the sale would come back to the same budget.

It is further recommended that ongoing costs associated with the operation of the show home including maintenance and promotion costs be met from the existing Clean Air Programme budget.

### **A Suitable Show Home**

The Council has recently acquired a property at 10 Leander Street to facilitate improvement and enhancement of Kruses Drain, which for some years has created flooding problems for the neighbouring residences. The intention is to secure the land required by the Council from the rear of the property to facilitate the drainage improvements and then resell the balance to recoup part of the capital expenditure that would enable the Water Services Unit to continue its Waterways and Wetlands programme. The property was purchased for \$167,000 and on resale it is estimated that \$160,000 would be recoverable. The property is currently untenanted pending processing through the surplus property disposal flow chart. Provided there are no other Council uses it is proposed that approval to dispose of the balance property be sought at the February 1999 meeting of the Council.

The Leander Street property does appear to be most suitable for an energy efficient show home and if retained for this purpose suitable arrangements will need to be made to reimburse the Water Services Unit's accounts.

### **Energy Advice Service**

Energy Advice is a service for householders who are at the point of making an investment in a new heating system and energy efficiency measures (using their money and/or the Council's subsidies). The purpose of the Energy Advice service is:

- a) To provide competent, independent and free advice to low income householders and all other participants of the Council's Clean Air and Energy Efficiency Programme, as well as to all Christchurch residents wishing to improve energy efficiency of their houses;
- b) To ensure the effectiveness of spending of the Council's funds. Most homeowners are unaware of the ways they can save energy as well as how they can effectively and efficiently heat their house. The conventional communication media cannot provide information on an individual basis. In most cases a householder would not hire a competent professional adviser, low-income householders obviously cannot afford it. Free advice from equipment suppliers and installers is not seen to be objective, as it is always associated with a certain product or a certain energy source. The main barrier to energy efficiency in Christchurch homes is the lack of information, coupled with technical and financial problems.

The Energy Adviser will analyze the individual customer's energy consumption and inform householders about their energy efficiency situation, discuss with them ideas of potential energy efficiency measures and associated investment costs and heating cost savings, advise on the optimum investment.

With the advent of the Canterbury Regional Council's Clean Air Plan, those who have solid fuel burners that had been installed between 12 and 15 years ago requiring replacement could also benefit from the show home, energy advice and public information service.

To provide an efficient operation, the Energy Adviser's office should be open to public during weekends and on Friday nights. Therefore, the office should not be situated in the Civic Offices building. Ideally it should be housed in the energy efficiency show home. The service needs to be readily available and easily accessible to the residents in order to raise consumers' awareness and promote energy responsibility.

Cost of Energy Advice Service is estimated at \$35,000 per year (including salary and support costs).

#### **INCREASE THE LEVEL OF INCENTIVES FOR ENERGY EFFICIENCY MEASURES**

Currently, the incentives for insulation are funded from EECA's Energy Saver Fund so the Council does not spend any money on this part of the programme. The EECA's incentives are: \$3.00 per square metre of ceiling insulation (which covers about 45% of installed cost) and \$1.60 per square metre of under floor insulation (about 27% of installed cost). The existing grants for thermal insulation have been made available from EECA on predetermined conditions of cost-effectiveness. The level of assistance from this source can not be increased above the present values. Currently, EECA funding of \$150,000 for the 1998/99 financial year and another \$50,000 for the 1999/00 is available. Applications for further funding can be made if necessary. However, the level of assistance per household is unlikely to change.

It would seem logical to expect an increase in the programme uptake rate as a result of increasing the level of incentives above their existing levels. However, international experience in the implementation of similar programmes suggests that such an increase in participation would be very marginal and even negligible in the long term. The Energy Manager discussed this matter with leading European experts who warned against making a mistake of increasing incentives. The existing levels are more than adequate, in fact generous in comparison with European and American programmes, and more generous than other projects in New Zealand that are financed from EECA's Energy Saver Fund.

On this basis it is not recommended to increase the level of incentives for insulation above the existing limits. This applies to the "general public" category only; for low income households different criteria may apply.

It is recommended that the implementation of the Energy Efficiency component of the Programme continue at its present level of grants. Because EECA's ability to provide funding in the future is uncertain, it is proposed to make provisions in the Council's budget for the 1999/00 and two subsequent financial years as follows:

- 1999/00	\$50,000
- 2000/01	\$150,000
- 2001/02	\$50,000.



**FURTHER MEASURES TO SECURE A BETTER UPTAKE OF THE ENERGY EFFICIENCY COMPONENT OF THE PROGRAMME**

These include:

- a) operational measures such as refinements of the existing programme rules and better advertising and promotion (at no additional costs), and
- b) commissioning of a professional market research at an estimated cost of \$10,000. It is recommended that this cost be met from the existing programme budget.

The measures are detailed in the Attachments.

**SUMMARY OF FUNDING REQUIRED**

**Table 4**

Year	Funds already allocated			Additional funds required				Total
	Current Clean Air Programme	Current Energy Efficiency Programme	Show Home purchasing and converting	Current Energy Efficiency Programme	Show Home maintenance	Energy Advice Service	Assistance to Low Income Home Owners (based on 2000 participants)	
1997/98	\$500,000	\$25,000						-
1998/99	\$500,000	\$150,000	\$191,000					-
1999/00	\$670,000	\$50,000		<b>\$50,000</b>	<b>\$10,000</b>	<b>\$35,000</b>	<b>\$576,000</b>	<b>\$671,000</b>
2000/01	\$670,000			<b>\$150,000</b>	<b>\$10,000</b>	<b>\$35,000</b>	<b>\$461,000</b>	<b>\$656,000</b>
2001/02	\$ 80,000			<b>\$50,000</b>	<b>\$10,000</b>	<b>\$35,000</b>	<b>\$115,000</b>	<b>\$210,000</b>

- Recommendations:**
1. That the Council approve in principle an increase in the level of assistance to low income home owners, subject to the Canterbury Regional Council Air Plan coming into force and the City Council approval of appropriate budgetary provisions in the annual plan for 1999/00 and further financial years.
  2. That the increase consist of the provision of 100% financial assistance for the costs of disabling an open fire or coal burner, 80 % of the installed cost of a budget electric heating appliance and 100% assistance for installation of energy efficiency measures, all up to maximum amounts as detailed in the report
  3. That the eligibility criterion for additional assistance to low income home owners be whether the house owner has a community services card.
  4. That no retrospective payments to those who have already participated in the incentive programme be made.
  5. That a provision of \$50,000 be made in the 1999/00 Annual Plan for continuation of assistance for insulation measures at its present levels to general public.

6. That Corporate Services Manager be authorized to arrange the purchase of a suitable home and its conversion into an energy efficiency show home.
7. That Corporate Services Manager make necessary arrangements for the employment of a part-time Energy Adviser.

**Chairman's**

**Recommendation:** That the above recommendation be adopted.