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Recommendations on a

Framework for Northern Ireland's £5 Energy Efficiency Levy Programme

Prepared by:

The Energy Saving Trust

Presented to:

The Office for the Regulation of Electricity and Gas (OFREG)

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The Energy Saving Trust

The Energy Saving Trust is a non-profit distributing company set up by the Government and major energy companies in response to the 1992 Earth Summit in Rio de Janeiro, which addressed world-wide concerns on environmental issues such as climate change and global warming. It is the UK's leading organisation working to deliver energy efficiency for domestic consumers.

Our Vision

Working through partnerships towards the sustainable and efficient use of energy

The Trust's current priorities are:

- Above all, stimulating energy efficiency in U.K. households to achieve social, environmental and economic benefits;
- Creating a market for clean fuel vehicles to deliver local and global environmental benefits;
- Sign-posting consumers towards credible renewable energy supplies.

Our Members

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CONTENTS

A FRAMEWORK FOR NORTHERN IRELAND'S £5 ENERGY EFFICIENCY LEVY PROGRAMME

1. INTRODUCTION

1.1 Background to the Energy Efficiency Levy Programme

The Energy Efficiency Levy Programme was introduced in Northern Ireland as part of a review of the price controls on Northern Ireland Electricity plc (NIE) by Ofreg in 1997/98. The Trust was asked by Ofreg to assist in the development of a suitable framework and energy saving target for the operation of the programme, which has been implemented by NIE on an annual basis since 1997/98. While NIE has neither a monopoly of access to the Levy nor any legal obligation to develop energy efficiency using the Levy, they have been alone in undertaking any activity under the programme.

Initially, the programme was based on a levy of £1 per customer (equating to approximately £665K per annum), with an annual energy saving target of 55GWh. The size of the Levy has gradually increased over the years, reaching a level of £2.05 per customer with an annual energy saving target of 122 GWh by 2001/02. The concept and operation of the Energy Efficiency Levy Programme was very much similar to the Energy Efficiency Standards of Performance (EESoP) Programme, run by the public electricity suppliers in GB, the major difference being that NIE were awarded a financial incentive to overachieve their annual target. Ofreg advised that a suitable level for this incentive would be £4,000 for each GWh saved above the target.

To date, NIE have been extremely successful in delivering energy efficiency projects under the Levy Programme. Between 1997/8 and 2001/02 their projects have resulted in gross lifetime electricity savings amounting to approximately 1,000GWh, of which some 630GWh have been accredited to NIE. NIE's target during this period was 422GWh, so this overachievement of 208GWh has earned NIE incentive payments of approximately £832K.

Customers have also benefited significantly from Levy projects that NIE have implemented. The projects have delivered over 383,000 energy efficient lamps, 12,000 cold appliances as well as insulating approximately 13,000 homes. Many homes have also had their heating systems upgraded. Lifetime energy and comfort benefits are valued at approximately £50M, which means that for every pound spent by NIE customers have benefited by approximately £9.70.

The problem of fuel poverty in Northern Ireland has been an important influencing factor as NIE have developed their energy efficiency projects. It is estimated that approximately 170,000 homes in Northern Ireland are classed as being in fuel poverty, and NIE have targeted the majority of their programmes at this sector using benefits criteria to identify this priority group. While the original Levy targets required that 50% of the energy savings come from the priority sector, NIE's projects have in fact

achieved close to 70%. There remains, however, much work to be done before the problem of fuel poverty is eradicated in Northern Ireland.

This document refers to both priority and non-priority customer groups. For clarity, the priority group are those customers who are in receipt of benefit, while the non-priority group are either those not in receipt of benefit or non-domestic customers.

1.2 Proposals for a new Energy Efficiency Levy Programme

In November 2001, the Director General of Electricity Supply for Northern Ireland published a consultation paper entitled 'The Energy Efficiency Levy'. The purpose of the paper was to seek views on the proposal to raise the Energy Efficiency Levy from a rate of £2.05 (2001/02) to £5 per customer.

This consultation document was published following a motion passed by the Northern Ireland Assembly on 25th September 2001. The motion stated: *'That this Assembly encourages the Regulator General for Electricity and Gas to contribute to the eradication of fuel poverty by increasing the Energy Efficiency Levy to £5 per customer, creating £3.6M to tackle fuel poverty.*

The consultation document focussed on the issue of fuel poverty and how the Levy could be used in helping to eradicate it. The majority of respondents to the consultation favoured that a large proportion of or even the entire amount of the Levy be spent in this sector.

Following the consultation period, Ofreg announced that the increase to a £5 Energy Efficiency Levy was to take place, and that collection would be through the Transmission and Distribution price control. Discussions held both during and after the consultation period have resulted in an agreement that a new framework for the operation of the Levy would be developed, and that the majority of the funding would be spent on projects to tackle fuel poverty by improving poorly heated and inadequately insulated properties.

The new framework will include an annual energy savings target (in GWh) as in previous years. Within this overall GWh target, projects implemented under the new Levy will also be required to 'fuel poverty proof' a given number of homes. The methodology behind this is discussed later in the document. The new Energy Efficiency Levy framework will be in place throughout the period of the new T & D price control review, which covers the period April 2002 to end March 2007.

1.3 The Role of the Energy Saving Trust.

When the Regulator decided to introduce the Levy in 1997/98, the Trust was commissioned to recommend an appropriate framework for the operation of the programme. On behalf of the Regulator, the Trust also evaluates all projects submitted under the Levy against the relevant criteria and provides technical advice to assist in

project development. The Trust carries out audits of completed projects to verify that they have been delivered in line with the approved statement of method.

The Trust has long experience in the development and evaluation of regulatory energy efficiency programmes. As well as our involvement in the Energy Efficiency Levy, we have played a key role in the regulatory programmes run in GB, including:

- Developing the frameworks for the operation of the EESoP programmes run between 1994 – 2002;
- Undertaking the evaluation of all projects implemented under the EESoP programmes;
- Co-ordinating energy monitoring and auditing activities;
- Developing and managing national energy efficiency projects on behalf of the energy suppliers;
- Assisting DEFRA in the development of the current Energy Efficiency Commitment programme (EEC), which has replaced the EESoP programmes.
- Assisting Ofgem in the administration of EEC, in particular acting as their technical advisory agents.

At Ofreg's request the Trust has undertaken to develop the framework for the delivery of the new £5 Levy programme. Ofreg have also requested that we continue our current evaluation role under the new framework, and will be responsible for assessing all projects submitted by energy suppliers.

1.4 Report Format

Section 2 of this document discusses in detail the various factors that need to be taken into account when developing the broad framework for the new Levy. Section 3 covers the detail of the assumptions made by the Trust when setting the overall energy saving target. Appendix 1 illustrates the administrative procedures to be followed by energy suppliers who submit projects under the programme. Appendices 2, 3, 4 and 5 contain examples of customer satisfaction surveys, the project completion proforma, guidance on the use of the different energy efficiency measures, and a list of legislation relevant to energy efficiency projects.

2.0 BROAD FRAMEWORK

2.1 Eligible Initiatives

The original framework document[1] for the Levy, developed by the Trust in 1998, set out a number of essential criteria that projects submitted for funding needed to satisfy. These criteria will continue to be applicable under the new £5 Levy.

Projects submitted for funding must therefore meet all of the following essential criteria:

- Funding must be targeted at activities that result in energy efficiency measures being adopted. Funding cannot be used for research, demonstration or purely educational projects.

- Projects aimed at tackling fuel poverty must be targeted in line with the guidance provided in Sections 2.3 and 3.4 of this document.

- Measures promoted should be in customers' financial interest. In other words, the present value of the lifetime customer benefits (energy bill savings and improved comfort) should exceed the cost of the measures;

- Measures should deliver overall economic benefits to Northern Ireland;

- Measures promoted should be proven technology which meet or exceed relevant standards (e.g. safety, quality, etc);

- Projects must be additional to any planned activity, regulatory obligation or government-funded initiatives. In order to ensure that Levy funding has effected the commencement of a project (i.e. the project would not have taken place without that funding) the supplier's contribution will normally need to be a minimum of 20%. This applies to all projects, but it is expected that this criteria would be applicable more to non-priority projects, as far higher levels of supplier funding are usually required for fuel poverty projects. Where it is proposed to fund less than 20%, clear evidence that the project would not otherwise proceed would need to be provided;

- Projects should be structured, where possible, to secure the maximum level of funding from customers and third parties, e.g. equipment manufacturers; NI Housing Executive;

- Projects should be designed and managed cost effectively;

- Projects should be designed to minimise free riders, i.e. those who are likely to have adopted a measure without any support or encouragement;

[1] "Northern Ireland Energy Efficiency Incentive"; EST: July 1998

2.2 Eligible costs

In broad terms, any activity which satisfies the above criteria is eligible for funding. Individual projects may include some or all of the following costs:

- Project development costs;
- Project management costs (see also section 3.8);
- Direct subsidies for measures;
- Loans to customers or third parties;
- Project-specific external costs including marketing;
- Monitoring costs;
- Evaluation costs;
- The Energy Saving Trust's costs associated in assessing, approving, evaluating and auditing projects on behalf of Ofreg.

2.3 The Funding Available

The new Levy has been introduced at a level of £5 per customer for 2002/03. With 710,550 customers, this equates to overall funding of £3,552,800 in the first year. The Regulator has stated that the Levy will increase in line with inflation, and the table 2.1 below illustrates the resulting increase in the Levy over the next 5 years of the programme. Following consultation with the Treasury an inflation rate of 2.5% per annum has been assumed over this period.

Table 2.1 - Energy Efficiency Levy adjusted for inflation

Year	Customer Numbers*	Rate of Levy	Total Available Funding
2002/03	710,550	£5.00	£3,552,750
2003/04	716,700	£5.13	£3,676,671
2004/05	726,750	£5.25	£3,815,437
2005/06	736,900	£5.38	£3,964,522
2006/07	747,200	£5.53	£4,132,016
Total			£19,141,396

***** Customer number forecast provided by NIE**.**

Note: While bidding for this funding will be on an annual basis (see Appendix 1, section 1.0), bids for projects lasting more than one year can be accepted, providing EST are satisfied that such projects represent better value for money. At least 25% of the funding shown above will still be available for bidding on an annual basis.

The 2002 T&D price control also allows NIE £250,000 per annum to spend on renewable technologies such as photovoltaics and solar water heating systems. Ofreg expect NIE to lever in additional funding to supplement this allowance.

While this funding source is separate from the Energy efficiency Levy, NIE may seek to encourage other energy suppliers to bid for funding from this source for some projects – particularly in rural areas.

2.4 The Focus on Fuel Poverty

As mentioned earlier in this report, the priority of the new Energy Efficiency Levy will be the alleviation of fuel poverty. Fuel poverty in the UK is caused by a combination of factors including poor energy efficiency of the home, the cost of fuel and low household income. The need to spend a large portion of income on fuel means that householders have to make difficult decisions about other household essentials. This can lead to poor diet, reduced opportunities to participate in the community, as well as an increased risk of ill health due to cold homes.

A Ministerial Group on Fuel Poverty has been set up, and has defined fuel poverty as follows:

' A household is in fuel poverty if, in order to maintain a satisfactory heating regime, it would be required to spend more than 10 per cent of its income (including Housing Benefit of Income Support for Mortgage Interest) on all household fuel use[2]'.

In considering the effective use of the £5 Levy, it is important to decide the allocation of the funding for fuel poverty projects. During Ofreg's consultation, it was certainly the wish of some parties that 100% of the funding be spent in this way. Having considered the various arguments, the Trust recommends, with Ofreg's agreement, that 80% of the Levy be spent on fuel poverty projects, with the remaining 20% being available for expenditure on projects involving non-priority and non-domestic customers. This equates to 100% of the increase in the Levy being allocated to fuel poverty projects compared to the previous Levy target.

The reasons for suggesting the 80/20 allocation are threefold:

- The overall level of energy savings arising from Levy projects will be optimised, balancing the objectives of tackling fuel poverty and the contribution to climate change targets. Due to the ability to lever in additional funding from non-priority customers to help pay for energy efficiency measures, projects delivered to these sectors are more cost effective. The Trust has calculated that by adopting an 80/20 allocation of funding as opposed 100% funding for fuel poverty, approximately 15% more energy savings will be achieved.

- Directing 20% of the funding toward non-priority customers would allow Levy projects to continue the 'market transformation' effect that has resulted from non-priority projects implemented to date. Due in part to the wider availability of 'A' rated appliances and quality energy efficient light bulbs under previous Levy

[2] "Energy – its impact on the environment and society"; DTI: July 2002

projects, the prices for these measures has dropped. These cost reductions can benefit all customer groups when they purchase these measures from retailers.

- All electricity customers in Northern Ireland contribute to the Levy. It is therefore considered fair that all customers have access, should they wish, to participate in projects implemented by energy suppliers.

When announcing the new Levy, the Regulator stressed that as well as achieving an overall saving of energy it should also target and 'fuel poverty proof' a specific number of homes. It is generally recognised that that those living in a dwelling that contains an efficient heating system and is well insulated should not be in danger of being in fuel poverty. NIE have already, in previous Levy projects undertaken to provide such a package of measures to individual homes and will in fact have already succeeded in 'fuel poverty proofing' some of their customers homes.

2.5 Levy Projects to tackle fuel poverty

During the Regulator's consultation process, some parties argued that the best use of the Levy would be to simply add it to the funding already in place for the Governments 'Warm Homes' fuel poverty programme. While this would certainly increase the number of priority group customers receiving assistance, and could form part of the Levy programme, the Trust considers that using an alternative approach can also provide an effective use of Levy funding to tackle fuel poverty for homes not eligible under the Warm Homes programme

The Trust therefore proposes that the fuel poverty proofing activity should be implemented using two complementary approaches, with each approach utilising 50% of the funding available for expenditure in tackling fuel poverty.

The first approach is for Levy projects to provide packages of heating systems and insulation measures to improve the least efficient properties in the housing stock, thus effectively 'fuel poverty proofing' those homes. The approach focuses on the status of the energy efficiency of the dwelling rather than the benefit status of the householder, by targeting homes with either electric storage heating or no central heating system. These homes are recognised as being the least energy efficient. Adopting this criterion would mean that homes ineligible for assistance under Warm Homes could instead be assisted by Levy projects. This approach indicates two advantages over the Warm Homes programme: -

- Research undertaken into the Warm Front scheme in England which has similar benefit based eligibility criteria has shown that about only 60% of those eligible for assistance under the programme are in fact fuel poor, and that many householders who do not receive benefits are also fuel poor. Levy projects will be able to assist these householders.

- Energy suppliers would be expected to lever in additional funding from third parties, such as the Housing Executive in order to 'fuel poverty proof' the least

efficient properties in the housing stock. Third party funding increases the cost effectiveness of measures implemented using Levy funding compared with direct funding of Warm Homes measures. NIE have been successful in the past in securing third party funding for their priority group projects, and it is expected that this can continue.

The second approach reflects the fact that the Levy provides vital funding needed to 'top up' the grants that the Warm Homes programme provides. This has already occurred for the last two years, and indeed representatives from DSD and EAGA, managing agents for Warm Homes, have stated that the programme would have difficulty in functioning effectively without contributions from the Levy. Approximately 95% of homes receiving the maximum grant available under Warm Homes Plus benefited from additional Levy funding last year.

'Top up' funding from the Levy allows a full package of heating and insulation measures to be installed in dwellings. It is required because the maximum grant available under the Warm Homes programme is often insufficient to provide the package of measures required to 'fuel poverty proof' properties. Levy funding used in this manner will be seen to have resulted in the 'fuel poverty proofing' of dwellings.

Under both of these approaches, it is proposed to set an annual target to 'fuel poverty proof ' a specific number of homes.

The two different fuel poverty targets are discussed in more detail in section 3.4.

2.6 Levy Projects for Non-Priority Customers

Historically, NIE have directed approximately 30% of Levy funds toward non-priority or non-domestic customers. As discussed above, work in these sectors will continue under the new framework, as 20% of the overall funding will be available. Over the 5 years this will represent approximately £3.83M.

There is significant potential for investment in energy efficiency measures in these sectors. When setting the overall energy saving target the Trust has examined the remaining potential for energy efficiency in Northern Ireland in the four main categories of measure - lighting, insulation, appliances and heating. The replacement of old, inefficient appliances is also a cost effective way of saving energy and forms part of the targeted 'measure mix'. The targeted measure mix is discussed in greater detail in section 3.5 of this document

2.7 The Opportunity for Second Tier Suppliers

While the Levy has always been available to NIE and second tier suppliers in Northern Ireland, NIE have to date been alone in implementing projects using Levy funding. The Regulator wrote to the thirteen second tier suppliers in early August 2002 informing them of the increase to the Levy, and inviting them to bid for Levy funding

should they wish to implement a scheme. The Regulator stated that the 'best' projects submitted under the new Levy would receive funding. In this context, the 'best' projects would be those that contributed to fuel poverty proofing dwellings and the overall energy saving targets most cost effectively.

It is expected that NIE will continue to utilise the vast majority of the Levy, as in previous years. Should they remain to be the sole supplier utilising Levy funding 100% of the targets will fall on them. However, should second tier suppliers become active under the programme a proportion of the targets will become applicable to them, and NIE's target will be reduced accordingly. This process is described in more detail in section 3.15.

It is recommended that all energy suppliers will be able to bid for Energy Efficiency Levy funding on an annual basis. The amount of Levy funding available each year is illustrated in section 2.1 of this document. Of this annual funding, 80% is available for expenditure on fuel poverty projects, with the remaining 20% available for projects focussed on non-priority customers.

Ofreg require suppliers to submit evidence of their ability to manage cost effectively such projects. In the case of no previous experience first year access will be limited to a maximum of £100,000 per supplier. This limit will be extended as the supplier develops a successful track record.

It is proposed that bids for funding be submitted as illustrated in Appendix 1.

2.8 Project Monitoring

All projects implemented under the Levy will be subject to the monitoring criteria laid out in Appendix 1. This monitoring will involve two distinct activities. Firstly, energy suppliers will be required to survey a sample of customers receiving measures, to ascertain their satisfaction with the project. Secondly, suppliers will be required to carry out quality monitoring on a sample of homes receiving building fabric measures. This will be to check that the measures have been installed in line with relevant procedures and standards. Deficiencies in quality of installation will need to be rectified.

Further guidance as to monitoring requirements is provided in Appendix 1.

2.9 Auditing

All projects implemented will be subject to random audit by the Energy Saving Trust. This has also been the case under previous Levy programmes. The purpose of the audit will be to check that the project has been implemented in the manner approved by Ofreg, and that the funding has been utilised as reported by the supplier. Further guidance as to the auditing procedure is provided in Appendix 1.
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3.0 SETTING THE OVERALL ENERGY SAVING TARGETS

3.1 Energy Savings from Supplier's Projects

Historically, projects submitted under the Levy have had their energy savings assessed on the basis of "ex-ante" figures. That is the savings are agreed in advance of implementation as opposed to an "ex-post" methodology where the savings would be determined based on energy monitoring before and after the installation of the measure. This is a practical approach that gives an agreed and consistently utilised set of data for all players and should continue to be used.

BREDEM[3] has been the main source of assessing the energy savings from insulation and heating measures for both Levy and EESoP projects in the past. The model calculates the energy requirements of domestic dwellings and estimates the likely savings resulting from energy efficiency improvements. It is the best validated and most widely used energy model in the UK. The model, when aggregated over all users, has been shown to accurately predict national domestic energy consumption. The Trust recommends that BREDEM continues to be used as the basis for setting energy savings from heating and insulation measures. When setting the targets, the Trust has used weighted average energy saving figures for each measure type, based on the property mix in Northern Ireland. When accrediting individual Levy projects, savings will be accredited on a property specific basis.

In the case of lighting and appliances the Trust has liased with bodies such as ETSU, the Electricity Association and the Environmental Change Unit at Oxford University to ascertain suitable levels of energy savings for accreditation purposes.

The energy savings accredited under the new Levy framework (see also 3.2) will expressed in terms of gigawatt hours (GWh) and will reflect the energy benefit to the consumer either in terms of reduced bills or improved levels of comfort. It is recommended that 100% of the energy savings arising from a project will be accredited to the supplier, provided the funding criteria set out in section 2.1 have been met.

3.2 Targets based on "Accredited Discounted Lifetime energy Savings"

As with previous Levy and EESoP programmes, savings generated by the new Levy should be expressed in terms of lifetime GWh energy savings. In order to compare the cost of saving energy with the cost of energy supply, savings should be multiplied by the discount factor to give "discounted lifetime energy savings". As with the EEC programme in GB, it is proposed that a discount factor of 6% is used.

It should be noted, however, that the real year on year energy savings will consequently be greater than the figures shown in this document. For example, a

[3] BREDEM - the Building Research Establishment Domestic energy Model

discounted lifetime energy saving of 100 GWh could in fact represent an annual saving of 10GWh for 15 years (150GWh).

3.3 Types of Fuels Eligible to be Saved and 'Fuel Standardisation'

Suppliers undertaking projects under the Levy programme will be able to implement projects that save electricity, gas, oil, coal and liquid petroleum gas.

So that the savings of different fuels can be expressed in a consistent manner, the savings will be shown in 'fuel standardised' terms that reflects the fuel's carbon content. The carbon factors used under this framework are compatible (with the exception of electricity) with those used in the UK Climate Change Programme, and are consistent with the concept introduced in the new EEC programme in GB. This methodology means that the value of energy savings from gas, oil, coal and LPG will be relative to electricity savings in terms of the carbon content of each fuel. This means that the energy savings able to be claimed from measures installed in electricity heated homes will be higher than other fuels.

Table 3.1 below indicates the fuel standardisation factors that are applied to each fuel.

Table 3.1

Fuel	Carbon Content of Fuel (kgC/kWh)	Fuel Standardisation Factor
Electricity	0.166	1.00
Gas	0.052	0.31
Oil	0.068	0.41
Coal	0.082	0.49
LPG	0.058	0.35

The fuel standardisation factors are derived by dividing the carbon factor of each fuel by the carbon factor for electricity.

The example below shows how this methodology would work when comparing the installation of cavity wall insulation in an electrically heated semi-detached home to an oil heated one.

Example:

Heating fuel of dwelling	BREDEM annual energy savings (kWh)	Fuel standardisation factor	Savings accredited toward targets
Electricity	5,667	1.00	5,667
Oil	5,899	0.41	2,415

Utilising this methodology under the new framework will be an improvement over that used for previous Levy programmes, where despite a lot of work being undertaken in homes heated by oil or coal, all the savings claimed were in terms of electricity. This will also increase the accuracy of reporting the financial and carbon savings resulting from the projects.

When setting the overall energy saving targets, the Trust has taken into account the heating fuel mix in Northern Ireland and therefore the potential for savings of each fuel type. The fuel mix is shown in table 3.2:

Table 3.2

Heating Fuel	**% of Northern Ireland Housing Stock**
Electricity	9%
Coal	18%
Oil	68%
Gas	4%
LPG	1%

Source: 2001 NI House condition Survey

3.4 Targeting Fuel Poverty

3.4.1 Installing packages of measures to 'fuel poverty proof' homes.

Approximately 170,000 homes in Northern Ireland are deemed to be in fuel poverty, and there is a need to determine the best way for the Levy to effectively target them. SAP is a logarithmic rating scale used to determine the energy efficiency of a property, running from a rating of 0 to 100. A rating of 1 is a very poor standard of energy efficiency, while 100 is excellent. A 1998 study of fuel poverty in England showed that over 40 per cent of those households with a SAP rating below 20 (i.e. poor energy efficiency) were in fuel poverty. The majority of those who were considered to be in fuel poverty were in homes with SAP ratings of less than 50. However, 20 per cent of fuel poor households had SAP ratings of 50 or more, which demonstrates that poor energy efficiency is not the only cause of fuel poverty.

The Trust recommends that a proportion of fuel poverty projects run under the new Levy should target homes with low SAP ratings – i.e. low levels of energy efficiency. Although it is recognised that this will not necessarily reach all fuel poor households, it will reach the majority of such households and is utilising the Levy aligned to it's intended use to improve energy efficiency. In addition, it is also recognised that it would be difficult to target fuel poor homes based on the collection of household income data which would be difficult to obtain and verify. The identification of poor energy efficient properties provides more practical criteria for energy suppliers.

The 1996 Northern Ireland House Condition Survey reported that approximately 13% of the Northern Ireland Housing Stock had a SAP rating of less than 20. As discussed

in section 2.3 this represents a very low level of energy efficiency. The figure of 13% equates to some 78,000 homes. The vast majority of these homes had no form of central heating with approximately 70% relying on solid fuel open fires or stoves, the remainder relying on portable or fixed electric heating.

It is therefore clear that these dwellings without any form of central heating or those with electric heating are most at risk from fuel poverty and the Trust recommends that it is these dwellings that are targeted by Levy projects. The Government's Warm Homes Plus scheme is able to provide a grant for energy efficiency improvements to a maximum of £2,700. This would not be enough for homes which require a new central heating system, as well as other energy efficiency measures, and therefore Levy projects could utilise their greater financial flexibility to 'fuel poverty proof' these types of properties.

The survey also provided an analysis of the spatial distribution of average SAP rating in Northern Ireland. When analysed at district level it is clear that there is a wide variation across the Province, with the percentages for SAP scores below 20 ranging from 5% in Derry to 21% in Belfast. In fact Belfast has the greatest concentration of dwellings with a SAP rating under 20. With the exception of the Upper Falls, all electoral areas in Belfast have a high percentage of dwellings with SAP ratings under 20. This concentration suggests that it should be possible to target the priority homes described above relatively easily. The Regulator has also stated that as well as in rural areas outside the gas expansion area, he would like to see work carried out up until the commencement of the 2004 financial year giving priority to the Belfast area. Thereafter he would like to see projects working in other areas, particularly those where the new gas network is being expanded such as the North West.

To effectively 'fuel poverty proof' dwellings, a package of building fabric energy efficiency measures should be provided. It is expected that installing the following package of measures should effectively fuel poverty proof a dwelling:

- Cavity wall insulation (£368)
- Loft insulation (£287)
- Tank insulation (£14)
- An efficient heating system for the main living areas (Average £2,800)

The typical average cost of these measures is shown in brackets, providing a typical package cost of approximately £3,470. It is anticipated that in nearly all cases the homes targeted for 'fuel poverty proofing' will require this full package of measures, although the overall targets assume that in some cases dwellings may have, for example, their cavity walls already filled. Section 3.11 illustrates the number of homes expected to be fuel poverty proofed when working in this manner.

3.4.2 Supporting the Warm Homes Fuel Poverty Programme.

The Regulator has expressed a desire for the new Levy programme to also work in tandem with other fuel poverty programmes, principally the Government's Warm Homes Plus Programme. There has already been interaction between NIE's projects and this programme over the past three years.

As mentioned previously, 50% of the Levy funds set aside for tackling fuel poverty is assumed to support the Warm Homes Plus scheme. Projects should seek to 'top up' the measures provided by the Warm Homes Plus scheme so that a full package of measures is provided to a dwelling – and thus ensure that it is fuel poverty proofed.

Typically, the maximum grant provided by Warm Homes Plus (£2,700) is insufficient to provide all the measure a dwelling usually requires. In urban areas, the grant is likely to be taken up in full by the new heating system, in which case Levy funds should be used to provide the necessary fabric insulation measures. In the case of rural properties, the cost of heating system replacement could considerably exceed the maximum grant available and Levy funding should be used to meet the additional cost on the heating system as well as fabric measures. As has been the case with previous Levy projects that have 'topped up' warm homes funding, these fabric measures will typically be cavity, hot water tank and loft insulation.

The target figures illustrated in section 3.12 show the number of homes that the Levy should support in fuel poverty proofing when working in this manner.

3.4.3 Homes Energy Efficiency Database

One of the programmes the Trust runs on behalf of Government involves the management of the Homes Energy Efficiency Database (HEED). The Homes Energy Efficiency Database provides a repository for recording the physical characteristics of individual domestic properties and the status of the specific heating and building fabric energy efficiency measures in those properties. There is also reference to measures and initiatives that reduce the energy consumption of lighting and domestic appliances. As a result HEED would provide a means to build up a detailed picture of the state of energy efficiency of the UK housing stock.

Suppliers undertaking projects under the new Levy must therefore submit data for inclusion in the database. The data required would consist of the address of the property and the energy efficiency measures installed. The recording of this data in the database will allow a quick and easy way for Ofreg and the Trust to verify the fact that packages of measures have been installed in individual dwellings, and that the required number of homes have been fuel poverty proofed.

The Trust will provide suppliers carrying out Levy projects with the necessary software to record this information.

3.5 Non-Priority and Non-Domestic Customer Projects

Outside of the main fuel poverty focus of the new Levy, 20% of the fund is proposed to be available for non-priority customer projects. This amounts to approximately £3.83M over the five years. When setting the original Levy framework in 1998, the Trust assumed that approximately 10% (based on the proportion of non-domestic customers) of the targeted energy savings would be achieved in the non-domestic sector. In practice, only about 2.5% (16GWh out of total savings of 630GWh) was achieved in this sector.

When considering the contribution from the non-priority sector to the overall energy saving target the Trust has assumed that 5% of the work will be carried out in the non-domestic sector. This assumption is based on the fact that although little work has occurred in the sector in the past, there are likely to be an increasing number of opportunities for non-domestic energy efficiency projects with the planned activities of the Carbon Trust[4]. Previous non-domestic projects have generally involved energy efficient lighting, and the energy savings assumptions in the target model reflect this.

With regard to the domestic non-priority sector, the availability of £3.83M in Levy funding over the 5 years represents a significant opportunity for energy efficiency. The Trust has analysed the remaining potential for the installation of energy efficiency measures in Northern Ireland to ascertain a suitable contribution to the overall energy savings target from this sector. Given the variations in cost effectiveness of the different measure types, it is necessary for modelling purposes to assume a particular mix of measures when developing targets.

The mix of measures assumed for this sector is illustrated in table 3.3 below:

Table 3.3

Measure Type	Target Savings Percentage
Lighting – CFLs	40%
Loft Insulation	13%
Cavity Wall Insulation	21%
Tank Insulation	1%
Efficient Appliances	10%
Heating Controls Upgrade	5%
Heating System Upgrade	5%
Non-Domestic	5%

For target setting purposes, the measure mix illustrated above has been applied to the Northern Ireland heating fuel mix described earlier in table 3.2. While this measure mix is not prescriptive in terms of the types of projects that should be undertaken, suppliers are required to ensure that their projects seek to provide as broad a mix of measures as possible. In particular, it is recommended that projects involving heating

[4] The Carbon Trust, a non-profit making company set up by Government in 2001, to manage the development of energy efficiency in the non-domestic sector. (http://www.thecarbontrust.co.uk/)

system upgrades for the non-priority customer group must not lead to savings exceeding 5% of annual targeted energy savings for non-priority customers. This is to achieve an overall programme of measures that is balanced to have both market transformation impacts in lighting and appliances as well as reflecting that the Fuel Poverty projects will have significant numbers of heating system upgrades.
The energy savings targeted to be derived from Levy projects carried out in these sectors is illustrated in section 3.13.

3.6 The Lifetimes of Energy Efficiency Measures

In line with the Government's Climate Change Programme, and as has been the case with Levy projects since 2001 the energy saving benefits will be assessed over the full lifetime of the measures. The measure lifetimes are indicated in table 3.4 below:

Table 3.4

Energy efficiency measure	Lifetime (years)
Loft insulation	30
Cavity wall insulation	40
Internal/external wall insulation	30
Efficient boiler	15
Heating Controls	20
Hot water tank and pipe insulation	20
Energy efficient lighting (CFLs)	10*
Domestic refrigeration and appliances	Various**

* But may change depending on lamp types supplied. The scheme submission spreadsheet will calculate the lifetime automatically.

** Please refer to Appendix 4.

3.7 Direct Cost Assumptions – Non-Priority Group Work

For the purpose of setting the non-priority element of the energy saving targets, the base direct cost (i.e. expenditure on energy efficiency measures) data has been based on an analysis of the costs incurred by NIE in delivering previous Levy projects. The following factors have also been considered when setting suitable measure costs, to determine whether or not any adjustment should be made:

- The impact of inflation over the 6 year period of the new Levy;
- The reduction of costs due to bulk purchases on installations;

Table 3.5 indicates the direct costs of the key measures assumed when setting the targets.

Table 3.5

Energy efficiency measure	Direct Cost
Loft insulation	£301
Cavity wall insulation	£384
Heating System Upgrade	£2000

Hot water tank Insulation	£14
Energy efficient lighting (CFLs)	£3.30

3.8 Indirect Cost Assumptions

Indirect costs include all the supplier's management costs associated with overseeing the programme, including design and development of projects, marketing, administration, monitoring, evaluation and reporting. When the original Levy was introduced, indirect costs were accounted for in two ways. Firstly, a sum of £150K per annum was available to NIE to cover their internal management costs. In addition the original targets also included an element of indirect costs to cover the marketing, delivery and reporting of the projects. The Regulator has made clear that the £150K per annum allowance will continue to be made available to NIE.

As well as this NIE allowance, the Trust has also examined the indirect costs incurred by NIE during previous Levy Projects and determined the proportion of energy efficiency Levy funding also required for indirect costs.

It is important that indirect spend under the Levy is clearly reported in project submissions. A supplier submitting a project will have to build the indirect costs into the overall scheme costs, breaking them down as follows:

- Project development;
- Project facilitation;
- Grant administration;
- Marketing;
- Monitoring;
- Evaluation & reporting;
- EST evaluation costs.

When each submitted project is evaluated by the Trust, the level of indirect costs will be analysed to ensure that indirect costs do not constitute an undue amount of overall scheme costs.

Historically, the Trust has recouped approximately 3.5% of the annual Levy funding to cover costs incurred under the scheme evaluation role undertaken on behalf of Ofreg. Under the new Levy, Ofreg have once again asked the Trust to undertake this role.

The Trust will cover its costs in developing the new framework for the Levy in year 1 (2002/03). At the same time as developing the new framework, the Trust has also continued to undertake our usual evaluation activities. The cost to the Trust of undertaking these activities, added to those incurred in developing the new framework mean that approximately 1.9% of the 2002/03 Levy funding will be due to the Trust.

Thereafter, the Trust will incur costs amounting to approximately 1.4% per annum of the available Levy funding. These costs will largely be due to the work involved in evaluating energy supplier’s projects. In addition to this, the Trust will also be

responsible for target setting / adjustment, providing advice and guidance to energy suppliers wishing to develop Levy projects and auditing completed projects. On behalf of Ofreg, the Trust also undertakes the evaluation of the various energy efficiency activities undertaken by NIE under the terms of their 2000-2005 Supply Price Control. These are explained in more detail in the document entitled 'Recommendations on a Sustainable Energy Framework for NIE's 2000-2005 Supply Price Control', published by the Trust in July 2001. The Trust's costs incurred in undertaking this work will form part of the annual 1.4% of Levy funding mentioned earlier.

3.9 Third Party Funding Assumptions

As discussed in section 2.1, suppliers will receive 100% of the energy savings resulting from a measure as long as the minimum funding level of 20% (including indirect costs) for a project has been met (Note: if a measure is joint funded by the Levy and another publicly funded energy efficiency programme, the savings may need to be apportioned between the two programmes). There is therefore an incentive for suppliers to secure financial contribution towards measures from a variety of other sources, such as customers, landlords, local authorities, manufacturers or retailers.

Ofreg have indicated that the ability to lever in additional funding to a project will be an important evaluation criterion, as it increases the cost effectiveness of Levy funding. The assumptions made with regard third party funding when setting the targets have been based on the levels achieved by previous Levy projects run by NIE, as well evidence from the EESoP programme in GB.

The Trust believes that suppliers should aim for the following contributions toward the cost of measures from customers and third parties in order to maximise the cost effective use of Levy funding:

- Non-priority customer owner occupiers 50%
- Priority customer owner occupiers 0%
- Social housing 50%
- Non-domestic 50%

Based on previous NIE heating system replacement projects for non-priority customers, it is assumed that third parties will fund a higher proportion than 50% of the measure cost. In such projects the new heating system has typically cost in the region of £2,000, with NIE contributing in the region of £200. In the target-setting model it has therefore been assumed that 90% of the cost of such upgrades will be born by the customer and other parties, while the supplier would provide the remaining 10%.

3.10 Energy Efficiency Levy Targets

The Trust recommends that annual energy saving and 'fuel poverty proofing' targets are set, rather than aggregate targets for the five year period. These annual targets would constitute: -

- overall level of energy savings to be achieved,
- number of homes to be 'fuel poverty proofed',
- a number of homes in the Warm Homes programme that Levy projects have supported to be 'fuel poverty proofed'.

The full range of these targets will become applicable from 1st April 2003 for the 2003/04 year and later years.

For the current year, 2002/03, it is proposed that the target would constitute: -

- overall level of energy savings to be achieved
- % Levy expenditure for priority group customers of 80%

This is because since the new Levy, introduced from 1st April 2002, NIE have developed a programme of work and submitted projects that would account for the all of the Levy for 2002/03. This has been necessary in order for NIE to adequately plan and implement full annual programme to utilise the increased funding level available. However, the projects submitted have not been focussed on a specific numbers of homes to be 'fuel poverty proofed'.

One should note that while the targets proposed in the next paragraphs are unlikely to change, there are certain factors that could influence the targets which will have to be reviewed on an annual basis. Carbon factors, for example could change (if the Northern Ireland electricity generation mix changes) and this would affect the targets in terms of the fuel standardisation factors discussed in section 3.3. Another example would be the proposed WEEE Directive[5], which would impact on the measure costs incurred by suppliers.

The Regulator has also stated that Levy funding that remains unspent during a given year will be carried over to the following financial year. The targets for that following year will be adjusted upwards accordingly.

The Trust will carry out the annual review of targets by the end of February each year. Any necessary changes will be notified to suppliers at that point. For example, if some of the 2002-03 funding remains unspent, it will be carried over into 2003-04. This will result in a bigger target for 2003-04 and the Trust would notify suppliers of the increase by the end of February 2003. Suppliers must therefore inform the Trust, by

[5] WEEE Directive – Waste Electrical and Electronic Equipment Directive – this will require manufacturers of such equipment to be responsible for recycling it at end of life. This will have an impact on the cost of the equipment. The Directive may become active during 2004 or 2005.

the beginning of February each year, of any perceived under-spend in the projects they have implemented.

3.11 Fuel Poverty Proofing Homes

Based on the issues discussed in sections 2.3 and 3.4, the Trust recommends that the annual numbers of homes that should be fuel poverty proofed by the Levy is as displayed in the table below. This will result in a significant reduction in the number of houses with the worst SAP ratings in Northern Ireland, but will still leave much work to be done by future Energy Efficiency Levies should they be put in place.

Table 3.6 – Fuel Poverty Proofing Targets

Year	No. Homes Fuel Poverty Proofed
2002/03	N/A
2003/04	472
2004/05	489
2005/06	508
2006/07	528
Total	1,997

3.12 Supporting the Warm Homes Programme in Fuel Poverty Proofing Homes

Based on the issues discussed in sections 2.3 and 3.4, the Trust recommends that the annual numbers of homes that the Levy supports in 'fuel poverty proofing' is as shown in the table below.

Table 3.7 – Assisting in Fuel Poverty Proofing

Year	No. Homes Assisted
2002/03	3,376
2003/04	3,395
2004/05	3,518
2005/06	3,650
2006/07	3,798
Total	17,737

3.13 The Overall Energy Saving Target

Taking into account the benefits resulting from fuel poverty proofing the homes mentioned in the targets above, plus the savings resulting from supplier's work in the non-priority and non domestic sectors, the overall aggregate energy saving target for each year is illustrated in the table below.

Table 3.8 – Overall Energy Saving Targets

Year	GWh/a

2002/03	332
2003/04	264
2004/05	274
2005/06	284
2006/07	295
Total	1,449

Please note that the first year energy saving target is higher than for subsequent years. This is because for 2003/04 onwards the specific fuel poverty proofing targets indicated in table 3.6 become active. These targets require the installation of heating systems which are less cost effective than other energy efficiency measures.

As mentioned in section 2.3, projects lasting more than one year may be accepted provided evidence can be provided that they represent better value for money. Despite this, the annual target will still need to be achieved and reported on. Should suppliers be running projects lasting more than one year, an interim completion report will be required at year end, to demonstrate the level of savings achieved at that time.

3.14 Incentive to Exceed the Target

The Regulator has requested that, as with previous Levy programmes, energy suppliers be awarded an incentive to overachieve the targets. This incentive will only be applicable to the overall annual energy savings target.

The Regulator has asked that the level of incentive remain the same as under previous programmes (£4,000 per GWh overachieved), but that it be adjusted in line with inflation since it was originally introduced in 1998. At an inflation rate of 2.5% per annum since that time, the new level of incentive will therefore be £4,415 per GWh overachieved. This rate of incentive will apply throughout the Levy period covered by this document.

No incentive is payable for simply meeting the target.

3.15 The Impact on Targets of Second Tier Supplier Activity

Following the Regulator's consultation on the new Levy, it seems likely that NIE will utilise a large proportion, if not all, of the available annual fund. If all the funding is utilised by NIE, 100% of the targets will also be applicable. Should second tier suppliers successfully bid for funding, NIE's targets will be reduced pro rata with the share of savings NIE would have been expected to achieve had they remained responsible for that category of project.

Should a second tier supplier successfully bid for 5% of the available annual fund, then 5% of the relevant targets would be apportioned to that supplier.

If that supplier were undertaking a project with the priority group, then a target of either fuel poverty proofing or assisting in fuel poverty proofing homes would be set.

In addition to this, a proportion (this would be calculated depending on the type of fuel poverty scheme proposed) of the overall energy savings target would also be placed on the supplier.

Likewise, should a supplier successfully bid for 5% of the funding available for non-priority customers, they would be set an energy savings target only.

The same incentive indicated in section 3.14 will be payable to second tier suppliers who overachieve the energy savings target they have been set.

3.16 Customer financial Savings

Customers who benefit directly from energy efficiency improvements do so in two principal ways:

- reduced energy consumption leading to lower bills, and
- improved comfort.

The total benefits to customers should therefore consider both the direct cost savings on electricity and fuel bills and the value of the savings taken up in improved comfort levels. These should be valued at the same rate as the energy savings. Thus, the total benefit to customers is simply the potential energy saving before comfort is accounted for multiplied by the appropriate unit price.

When calculating the benefits that result from Levy projects, the fuel prices illustrated in table 3.9, should be used:

Table 3.9

Fuel type	**Cost per kWh**
Electricity peak rate (for lighting and appliances)	9 p/kWh
Electricity (heating or insulation measures)	4.36p/kWh[5]
Gas	1.69p/kWh
Oil	1.91p/kWh
Coal	1.97p/kWh
LPG	2.6p/kWh

The Trust will review these prices on an annual basis, and update if necessary, so that an accurate picture of the financial benefits realised by customers benefiting from the Levy can be derived.

[5] Based on a mix of 80% of the savings being night rate and 20% day rate. This mix has been derived from EESoP 1 energy monitoring projects.

3.17 Carbon Savings

The Trust recommends that the carbon emission factors illustrated in table 3.9 are used when reporting the carbon savings resulting from Levy projects. These are consistent, with the exception of electricity, with those used in the EEC programme in GB.

Table 3.10

Fuel type	Carbon emission factor (kgC / kWh)
Electricity	0.166
Gas	0.052
Oil	0.068
Coal	0.082
LPG	0.058

The financial and carbon savings resulting from projects will be calculated automatically by the scheme submission software developed by the Energy Saving Trust.

To ensure that carbon savings are accurately calculated, comfort benefits taken up by customers need to be removed from the overall energy savings. Comfort factors are therefore applied to the overall energy savings.

The comfort factors applied to the theoretical BREDEM savings are based on the Trust's previous experience in the SoP programmes. For insulation measures a comfort factor of 50% (that is 50% of the expected theoretical energy savings are taken in increased comfort) is assumed for the priority customer group and 35% for other households.

In light of there being no data available with regard comfort uptake from heating measures such as boilers or heating controls, the Trust recommends that no comfort factor be applied to these measures.

For appliances there is unlikely to be any significant change in usage between efficient and less efficient products, so no comfort factor will apply.

For lighting, market research has shown that as a result of the increased use of compact fluorescent lamps (CFLs) compared with GLS lamps, a comfort factor of 3.5% should apply**.**

APPENDIX 1 – ADMINISTRATIVE PROCEDURES

1.0 BIDDING FOR ENERGY EFFICIENCY LEVY FUNDING

All energy suppliers will be able to bid for Energy Efficiency Levy funding on an annual basis. The amount of Levy funding available each year is illustrated in section 2.1 of this document. Of this annual funding, 80% is available for expenditure on fuel poverty projects, with the remaining 20% available for projects focussed on non-priority customers.

Bids for funding must take the form of a formal project submission as discussed in Appendix 1. Projects proposed for a given financial year can be submitted between 1st December to 31st January the preceding year (i.e. projects proposed for the 2004/05 financial year can be submitted between 1/12/03 to 31/1/04).

All bids for funding must be sent to the Energy Saving Trust's Evaluation Manager at the following address:

James Russill
Evaluation Manager
Energy Saving Trust
21 Dartmouth Street
London
SW1H 9BP

Tel: 020 7654 2475
Fax: 020 7654 2444

Electronic copies of bids must also be sent to the following e-mail address:

Jamesr@est.co.uk

2.0 PROJECT SUBMISSION

2.1 Project Reference Numbering

Each Levy project submitted by an energy supplier must have a specific reference number. This format of this number shall be made up as follows:

Supplier ID / Year / Project Number / Project Measure Type

The supplier ID should consist of 3 letters that clearly identify that supplier, for example Northern Ireland Electricity's ID would be 'NIE'.

The year should be shown as the last two digits of the financial year in which the project is to be implemented.

The project number should consist of two digits. Should a supplier submit more than one project in a given financial year, the project number should increase sequentially for each scheme, e.g. 01, 02 etc.

The project measure type should be shown as follows:

A = Appliances only
H = Heating (Including boilers and controls) only
I = Insulation only
L = Lighting only
M = Mix (e.g. a lighting & insulation scheme or a heating and appliance scheme)
O = Other measures not covered by the above

To illustrate an example, if Northern Ireland Electricity submitted their first project during the 2003 financial year, and that project was a lighting project, the project reference number would be **"NIE 03 01 L".**

2.2 Project Submission

Suppliers must submit a Statement of Method for each project. Each submission must consist of the following:

- Written description of the scheme
- Technical details of the scheme

Suppliers must send their project submissions to the Trust.

A guide showing the main areas Suppliers must cover is contained in the following paragraphs. This is not intended to be definitive in itself, however it is hoped it will provide a useful template for Suppliers to use when preparing their project submissions for Ofreg and the Trust.

Suppliers are required to complete and send to the Trust a signed, hard copy of each submission. Projects must also be submitted electronically to the Trust using the software provided by the Trust.

2.3 Written Description of the Scheme

The intention of the written description is to provide the Trust and Ofreg with sufficient information to be able to effectively evaluate submissions. Where projects are particularly large, complex or innovative, additional information may need to be provided.

The following details must be included in the written part of the submission:

- Project reference number.
- Project title.
- Project description - this must include:

- a brief description of the scheme, including the measures involved. This must clearly indicate whether or not the scheme is aimed at fuel poverty proofing homes, assisting other programmes in fuel poverty proofing homes, or is aimed at non-priority customers.;
- a description of the properties targeted by tenure type (OO/PR/LA/HA). This applies only to building fabric measures such as insulation;
- a description of the project partners involved;
- an indication if the scheme links in with other programmes such as Warm homes;
- the time-scale of the scheme – the intended time plan for implementing the scheme, i.e. start and finish dates;
- an indication of who will carry out the project, and how they were selected (e.g. has a competitive tender process been undertaken);
- where the project is to take place (geographically);
- a brief summary of the forecast costs (by Supplier, customers and other parties) of the project;
- the forecast energy savings;
- a forecast of the number of properties that will be 'fuel poverty proofed';
- a statement of how the scheme will address the monitoring requirements laid out in section 2 of this document.

- A description of how the scheme is to be marketed and targeted – this must include:

- an estimate of the number of customers, with an indication of the percentage of 1st tier and 2nd tier customers, expected to benefit from the scheme;
- which type of customer groups are being targeted;
- an estimate of the proportion and type of disadvantaged customers targeted, and on what grounds they are deemed to be disadvantaged;
- an indication of how the scheme is to be promoted and marketed;
- a description of the terms on which the project is being offered to customers;
- an indication of what commitments, if any, are required of customers covered by the project;

Note: Ofreg require applicants to submit evidence of their ability to manage cost effectively such projects. In the case of no previous experience first year access will be limited to a maximum of £ 100,000 per applicant.

2.4 Technical Details of the Project

Suppliers must submit the technical details of the project using the submission software provided by the Trust.

The main technical details which require inputting are:

- Project reference number
- The total number of different types of measures targeted by the scheme. This must be broken down by property type, property heating fuel type and customer grouping (this applies to building fabric measures only).
- Details of the direct cost of each measure per property type and customer grouping (non priority / priority).
- Details of the amount of supplier, customer & third party financial contribution per measure.
- A forecast of the total level of indirect (management and administration) costs.

2.5 Project Approval

Upon receipt of an energy efficiency project submission, the Trust will review it to check that the criteria in sections 2.3 and 2.4 above have been met.

Once the Trust is satisfied that the relevant criteria have been met they will endorse the project. This endorsement, as well as the project submission will then be passed onto Ofreg for final approval. Suppliers **must not** commence projects until final approval has been granted. Final approval effectively constitutes an agreement from Ofreg that the scheme has been successful in being awarded Levy funding, following the bidding process described earlier. Suppliers will be notified of final approval in writing from Ofreg.

Ofreg have clearly stated that only the projects that make best use of Levy funding – i.e. those that are the most cost effective in terms of energy saved compared to expenditure – will be approved.

Ofreg require applicants to submit evidence of their ability to manage cost effectively such projects. In the case of no previous experience first year access will be limited to a maximum of £ 100,000 per applicant.

3.0 PROJECT MONITORING REQUIREMENTS

3.1 Customer Satisfaction Monitoring

Suppliers are required to undertake and report on the monitoring of customer's satisfaction with the project. The supplier should target a minimum of 5% of all homes receiving measures, with the exception of CFLs.

For CFL projects, customer satisfaction monitoring must be carried out on the following sample size:

- for each type of CFL scheme undertaken (e.g. bulk delivery / mail order CFLs etc); 1% or 1000 customers, whichever is the less.

For further guidance, Appendix 2 of this document contains examples of customer satisfaction surveys that suppliers could use. An example is given for both lighting projects and heating / insulation projects.

3.2 Quality of Installation Monitoring

The installation of energy efficiency measures through Levy projects so far, has generally been carried out to very high standards. It is important that standards are maintained and are part of a 'quality culture' that suppliers adopt in their approach to delivering energy efficiency. With this in mind, suppliers must include within the written description of the scheme the QA approach they intend to adopt when undertaking the project. The text must address issues such as the quality of materials used, products installed and working practices.

During the Commitment suppliers must survey and report on the quality of installation in a minimum of 10% of homes receiving fixed 'fabric' measures such as insulation or heating measures. This quality monitoring should be carried out by a suitably qualified person, and should check whether or not the measures have been installed in line with approved British Standards etc. Any deficiencies in quality of installation identified must be rectified. Some of the more frequently referred to Standards are listed in Appendix 4 of this document.

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For CFL projects, quality criteria will be fulfilled if lamps included on EST's approved list are used.

For appliance projects, assuming that all products used have relevant CE marking, there are no additional quality monitoring requirements.

Should suppliers undertake projects in conjunction with Local Authorities it is often the case that the Local Authority will undertake quality monitoring themselves. Should this be the case, suppliers must provide an outline of the QA procedure adopted by the Local Authority.

4.0 PROJECT COMPLETION REPORTING

Once projects have been completed, suppliers are required to complete a post-implementation form (see Appendix 3). The information submitted must include:

- submission spreadsheets containing final outturn data. All information to be quoted on the post-implementation form can be derived from these sheets

- Results of customer satisfaction or quality monitoring activities. If it is not possible to submit this information at the time of completion submission, it may be supplied subsequently.

- Completed Post-Implementation Form (Appendix 3). All sections must be completed. Within the additional information section, it is important to explain any discrepancies between original scheme submission and completion. In the case of costs & savings figures, this may simply be down to more or less uptake than was initially envisaged, or something more specific such as extra fulfilment costs. In the case of scheme methodology, it may be an alteration of delivery mechanism, or a change in terms of the measures offered. Finally, please specify the model of measures delivered where relevant. CFL models should be specified so as to allow cross-checking with the EST approved list, and cold appliances and boilers, where the savings are related to the manufacturer's energy label, should be included.

5.0 ANNUAL REPORTING

An annual report is required by, and for, OFREG in respect of each licensee's performance under the Energy Efficiency Levy Programme. Annual Reports will be due by the end of June each year, and must be made public by all suppliers undertaking projects under the Programme during the previous financial year.

Annual Reports must cover the following particular issues:

- The level of performance against the targets.
- A description of each project implemented during the previous financial year including:
  - the type of consumers involved;
  - the objective(s);
  - the achievements and energy savings of energy each project achieved;
  - the benefits to customers in terms of bill savings and comfort
  - the benefit to the environment in terms of carbon savings.

- The amount of money spent by Supplier in preparing each project and causing them to be implemented over the last financial year.

6.0 AUDITING

Projects implemented under the new Levy will be subject, once completed, to audit by the Energy Saving Trust. This has also been the case during past Levy programmes. The Trust has long experience in auditing energy supplier's energy efficiency projects, having audited both Levy projects (since 1998/99) and also those implemented by the GB energy suppliers under the EESoP programme (1994-2002).

The following information is likely to be reviewed during audit:

- **Financial Information:**

  The customer / third party / supplier contributions to the scheme will be established, and checked against those claimed in the projects completion report. Purchases orders, invoices etc. will be reviewed to verify this.

  The key aim will be to establish the amount of the Energy Efficiency Levy spent by the Supplier

- **Tendering:**

  The audit will check that the selection of scheme installers, managing agents and key product providers has been subject, where necessary, to competitive tender. If affiliated organisations have been used, the justification for doing so will be explored.

- **Installation of Measures:**

  The audit will check that the types of measures installed are consistent with the Statement of Method. With regard to completed projects, it will be necessary for the Supplier to provide evidence that the numbers and types (including property types) of measures claimed to be installed in the completion report are correct.

  Some specific areas may include:

  - that cold appliance projects have made appropriate arrangements for the disposal of old appliances;
  - that CFLs delivered are on EST's approved list;
  - that appropriately trained installers have been used;

- **Delivery Mechanisms**

  The audit will check that the delivery mechanisms and terms under which a scheme is offered to customers is in line with that described in the approved Statement of Method, including the involvement of any retailers or contractors.

- **Monitoring**

  The audit will check the methodology the Supplier had in place for:

  - Quality assurance, with regard the installation of measures (including how failures are rectified, what % of installations checked, who carries out these checks, whether or not measures, in particular CFLs, are of a correct specification).
  - Customer satisfaction (including the % of customers questioned and how dissatisfied customers are dealt with).

APPENDIX 2 – CUSTOMER SATISFACTION SURVEY EXAMPLES

Customer Satisfaction Survey

Northern Ireland Energy Efficiency Levy Programme

Your name: **Your address:**	

CFL Projects

Q1	**Where were the lamps installed?**	**Hallway**	
		Kitchen	
		Living Room	
		Bathroom	
		Bedroom	
		Other (please state)	
Q2	**Were you already using energy saving lamps before installing low energy lamps?** (please circle how many)	**1 2 3 4 5 6 Other**	
Q3	**Do you use your lighting more or less than** **Before installing low energy lamps?**	**Much less**	
		A bit less	
		About the same	
		A bit more	
		Much more	
Q4	**Are you likely to fit another energy saving Lamp when the current one(s) fail?**	**Yes**	
		No	
		Don't know	
Q5	**What do you think are the main advantages of energy saving lamps?** (tick any that apply)	**Save energy**	
		Save the environment	
		Save money	
		They last longer	
Q6	**What do you think are the main Disadvantages?** (tick any that apply)	**Different tone of light**	
		They are ugly	
		Take time to brighten up	
		Other (please specify)	
Q7	**What is your overall level of satisfaction With the lamps you have received?**	**Very satisfied**	
		Quite satisfied	
		Neither satisfied nor dissatisfied	
		Not very satisfied	

Not at all satisfied	

Customer Satisfaction Survey
Northern Ireland Energy Efficiency Programme

Your name:
Your address:

Heating/Insulation Measures

Q1	**How satisfied were you with the quality of Work undertaken by the installers?**	**Very satisfied**	
		Quite satisfied	
		Neither satisfied nor dissatisfied	
		Not very satisfied	
		Not al all satisfied	
Q2	**Is your home warmer than before the Energy saving measure(s) were installed?**	**Yes**	
		No	
		Don't know	
Q3	**Are your fuel bills lower since the energy saving measures(s) were installed? (may not be applicable if no bill received since installation)**	**Yes**	
		No	
		If yes, please comment	
Q4	**Were you given energy saving advice at the same time as the work was carried out?**	**Yes**	
		No	
Q5	**How would you rate this energy advice?**	**Excellent**	
		Good	
		Satisfactory	
		Poor	
		Very Poor	
Q6	**Overall, how would you rate the energy saving scheme?**	**Excellent**	
		Good	
		Satisfactory	
		Poor	
		Very Poor	

APPENDIX 3 – PROJECT POST IMPLEMENTATION PROFORMA

NORTHERN IRELAND ENERGY EFFICIENCY LEVY PROGRAMME
SCHEME COMPLETION POST-IMPLEMENTATION FORM

Supplier:		**Scheme Reference No:**	
Scheme Name:			

Principal Costs & Savings:

	Statement of Method	**Scheme Completion**
Supplier Accredited Savings - (GWh)		
Number of Homes 'Fuel Poverty Proofed'[1]		
Number of Homes Project has Assisted in 'Fuel Poverty Proofing'[2]		
Total Carbon Savings - (tC)		
Supplier Direct Costs (£)		
Supplier Indirect Costs (£)		
Total Scheme Costs (£)		
Supplier Cost Effectiveness - (p/KWh)		

Additional information from supplier to confirm whether there was any discrepancy between the Statement of Method and scheme completion and if so to explain in terms of scheme delivery mechanism, savings and costs, and to specify the model of measures installed where appropriate (e.g. CFLs / Refrigerators / Boilers):

	Date	**Signature**
Project completed as stated above, and savings calculated, and scheme delivered in accordance with the Statement of Method		

[1] i.e. homes where the project has installed a full package of energy efficiency measures
[2] i.e. homes where the project has assisted in fuel poverty proofing by providing 'top up' measures to those being provided by another energy efficiency programme

APPENDIX 4 – GUIDANCE ON THE USE OF ENERGY EFFICIENCY MEASURES

The following text provides guidance on the installation of the more common energy efficiency measures. Where appropriate, reference is made to relevant British Standards or guidance notes. An overview of British Standards is available at the BSI website at the following address. Copies of the Standards can also be ordered through this site http://bsonline.techindex.co.uk/.

1.0 INSULATION MEASURES

1.1 Loft insulation

Loft insulation provided under EEC projects should ideally be installed to a depth of 250mm. Depths of less than 250mm will only be considered for the accreditation of energy savings where it is physically impossible or unsafe to install 250mm.

The lifetime of loft insulation is assumed to be 30 years.

There are two British Standards relevant to the installation of loft insulation. These are:

BS 5803 Part 1: 1985 "Thermal insulation for use in pitched roof spaces in dwellings. Specification for man made mineral fibre thermal insulation mats." This specifies the standard loft insulation materials must meet to be eligible for installation under EEC.

BS 5803 Part 5: 1985 "Thermal insulation for use in pitched roof dwellings." Specification for installation of man-made mineral fibre and cellulose fibre insulation. This standard specifies the requirements when installing loft insulation in pitched roof dwellings.

All lofts insulated by an EEC scheme must include, where appropriate, loft boarding in order to provide safe access to the cold water tank. When insulating lofts, the loft hatches must be insulated and draught sealed.

In addition to these requirements, good practice when insulating roof spaces requires the insulation of the cold water tank and associated pipe work. The relevant British Standard is:

BS 5422: 2001 "Method for specifying thermal insulation materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40^{o}C to +700^{o}C".

Cases of condensation in newly insulated lofts have been identified in previous EESoP programmes in GB. There are several factors that can lead to condensation in lofts, such as failing to draught seal the loft hatch or the blocking of loft vents with

insulation. Energy suppliers must ensure that their installers take care to minimise the risk of condensation when installing loft insulation.

1.2 Cavity wall insulation

The energy savings associated with cavity wall insulation are displayed in the EEC Scheme Submission Spreadsheet, and also in the Excel spreadsheet entitled 'EEC Energy Savings Data'. Note that the energy savings differ considerably between homes constructed pre 1976 and those constructed post 1976. Installers must therefore provide the age of the property insulated when reporting to energy suppliers, to enable suppliers to accurately report on their completed projects.

The lifetime of cavity wall insulation is assumed to be 40 years.

Insulation materials used must be certified by the British Board of Agrement (BBA) and must conform the following British Standards:

BS EN 13162: 2001 "Thermal insulation products for buildings. Factory made mineral wool (MW) products. Specification". This standard replaces the current BS6232.

BS 6676 Part 1: 1986 "Thermal insulation of cavity walls using man made mineral fibre batts (slabs). Specification for man made mineral fibre batts". This is the relevant standard for materials if man-made mineral fibre batts are used as the insulating material when insulating a cavity wall.

BS 6676 Part 2: 1986 "Thermal insulation of cavity walls using man-made mineral fibre batts (slabs). Code of practice for installation of batts (slabs) filling the cavity".

BS 8208: 1985 "Guide to the assessment of suitability of external walls for filling with thermal insulants. Existing cavity construction".

A Cavity Insulation Guarantee Agency (CIGA) guarantee must be provided to the customer when the insulation work has been completed.

1.3 Draught proofing

When calculating the draught-proofing energy savings, BRE have assumed that only buildings with 'high ventilation rates' should be insulated to merit the accreditation of the energy savings listed in the Submission Spreadsheet. Energy suppliers should therefore attempt to target homes with 'high ventilation rates' when undertaking draught proofing projects. Typically, this type of home will be in an exposed position, or have ill fitting or sash style windows.

The lifetime for draught proofing measures is assumed to be 10 years.

The British Standard relevant to the materials used for draught proofing is:

BS 7386: 1997 "Specification for draught strips for the draught control of existing doors and windows in housing". This Standard specifies the requirements for products to fit the common types of installed doors and windows in housing not originally designed to incorporate draught stripping.

1.4 Hot water tank insulation

Details of the assumptions behind the energy savings for tank insulation is provided in the BRE report, contained in Appendix 1 of this document.

A lifetime for tank insulation is assumed to be 10 years. The relevant British Standard for tank insulation is:

BS 5615: 1985 "Specification for insulating jackets for domestic hot water storage cylinders". This Standard specifies the performance, in terms of the maximum permitted heat loss, the materials, design and marking of jackets for cylinders to BS699 and BS1566.

1.5 High Efficiency Cylinders

Using R&D funds from the EESoP 3 scheme in GB, a comparison was made between the energy required to heat 3 different types of hot water cylinders, namely the 'stock average' cylinder, the British Standard cylinder and the 'high performance' cylinder.

The stock average cylinder was defined by a combination of survey data on insulation and expert opinion on the mixture of tank (i.e. heat exchanger) types in the stock. The British Standard and high performance types are described in 'Central Heating System Specifications', CHeSS (Energy Efficiency Best Practice programme General Information Leaflet 59).

For dwellings where the water is heated from a gas fired boiler the findings were:

In a property with no primary pipework insulation, the energy saved by replacing a stock average cylinder with a high performance cylinder is **994 kWh/annum**
In a property with insulated primary pipework, the saving from replacing a stock average cylinder with a high performance cylinder is **533 kWh/annum**
In a new house, the energy saved by installing a high performance cylinder rather than a British Standard cylinder is **153 kWh/annum**

For dwellings with water heated by electric immersion heater the savings are:

181 kWh/annum for replacing a stock average with a high performance cylinder
39 kWh/annum for installing a high performance rather than a British Standard cylinder

These energy savings values should be entered into the 'other insulation' section of the Scheme Submission Spreadsheet. The cylinders are classed as insulation measures, because the vast majority of the energy savings result from the high levels of insulation in their design.

A lifetime of 20 years should be assumed for this measure.

Installations of hot water cylinders should meet the best practice guidance set out in 'Central Heating System Specifications, CHeSS (Energy Efficiency Best Practice programme General Information Leaflet 59). This document has been distributed by the Energy Saving Trust to energy suppliers previously. Further copies are available from BRECSU, on 01923 664258.

1.6 Radiator panels

The energy savings shown below are attributable to radiator panels constructed in a 'louvered' or 'saw toothed' fashion (with raised ridges), which is by far the most common method of design.

The energy savings on a 'per square metre installed basis' are 134kWh/a for both gas and oil heated homes. These savings are attributable to panels installed behind radiators on both external and internal walls.

The above data is based on measurements on a panel with a reflective surface. Panels are available which do not have a reflective surface, in which case its effect on energy saving should be taken as **one half** of the above value.

Radiator panel energy savings should be calculated on a 'per panel' basis. This calculation requires the assessment of the area of the radiator panel, which should then be applied to the data shown above. For example, a panel with a surface area of 0.3 square metres would achieve energy savings of 40.2 kWh when installed. In submitting such projects, suppliers should indicate the numbers of panels forecast to be installed, therefore allowing the overall scheme savings to be calculated. Suppliers should include a breakdown of their calculations in their Statement of Method for the scheme. The energy savings values and total area of panel installed should be entered into the 'other insulation' section of the Scheme Submission Spreadsheet.

A measure lifetime of 10 years should be assumed for radiator panels

The energy savings attributable to radiator panels will be revised in the near future, when the results of an energy monitoring exercise currently being undertaken are finalised.

2.0 LIGHTING MEASURES

2.1 Compact fluorescent lamps (CFLs)

For the purposes of accrediting ex-ante energy savings, all lamps used in Levy projects must be included on the Energy Saving Trust's list of approved CFLs, and have achieved Energy Efficiency Recommended status, awarded by the Energy Saving Trust's Endorsement Programme. These lamps have been tested in accordance with the requirements of the Trust's lamp specification. The approved CFL list is circulated on an ongoing basis, as and when revisions are necessary. For confirmation of the current version, contact James Russill at the EST on 020 7654 2475. All the lamps currently listed on the EST's approved list have also successfully achieved Energy Efficiency Recommended status.

Energy suppliers are required to enter the numbers and types of lamps installed by their lighting projects into the relevant place in the Scheme Submission Spreadsheet. The lifetimes of the lamps (in hours) is also required to be entered into the spreadsheet. The lifetime entered should be as displayed on the approved list. Where the life status is shown as 'ongoing' the manufacturer's claimed lifetime (i.e. as shown on the packaging) should be entered into the spreadsheet.

If CFLs not approved by the Trust are used in lighting projects, additional quality monitoring will be required.

2.2 Luminaires

Projects involving the installation of luminaires must only use lamps that are displayed on the Energy Saving Trust's approved CFL list. These lamps have been tested in accordance with the requirements of the Trust's lamp specification.

The ballast used in conjunction with the approved lamp must meet the requirements of the Energy Saving Trust's Luminaire Specification. Energy efficient luminaires meeting the requirements of this specification are eligible for use of the 'Energy Efficiency Recommended' logo, under the Trust's Endorsement Programme. For details of endorsed luminaires please contact the Trust.

The Scheme Submission Spreadsheet enables the calculation of energy savings arising from the installation of luminaires. The relevant part of the 'CFL' worksheet should be used to input the number, type and hours of use of luminaires to be delivered by the scheme.

3.0 HEATING MEASURES

3.1 Boilers

Boilers installed by projects should ideally be a SEDBUK rated 'A' or 'B' model. However, it has been recognised during target setting, that condensing boilers are not suitable for all installations, particularly where combination boilers are required. It

will therefore be acceptable for C rated boilers to be installed when appropriate. The SEDBUK database has been set up as part of the Government's Energy Efficiency Best Practice Programme and can be viewed at http://www.sedbuk.com/. It indicates the combustion efficiency of all currently available boilers.

When evaluating boiler projects, the energy savings will be based on the combustion efficiency of the new boiler (as provided by SEDBUK) against the average combustion efficiency of new non-condensing boilers, which is assumed to be 78%. The numbers of boilers installed by a scheme should be entered into the relevant part of the Scheme Submission Spreadsheet (there is a different heating worksheet for each fuel). The worksheets are set to a default combustion efficiency of 88% for condensing boilers. If the energy supplier does not provide the actual combustion efficiency of the boilers provided by a scheme, this is the efficiency that will be used.

The lifetime assumed for boilers is 15 years.

Installations of boilers must meet the best practice guidance set out in 'Central Heating System Specifications, CHeSS (Energy Efficiency Best Practice programme General Information Leaflet 59).

Several British Standards also apply:

BS 5440 Part 1: 2000 "Installation and maintenance of flues and ventilation for gas appliances of rated input not exceeding 70kW net (1st, 2nd and 3rd family gases). Specification for installation and maintenance of flues".

BS 5440 Part 2: 2000 "Installation and maintenance of flues and ventilation for gas appliances of rated input not exceeding 70kW net (1st, 2nd and 3rd family gases). Specification for installation and maintenance of ventilation for gas appliances".

BS 6798: 2000 "Specification for installation of gas-fired boilers of rated input not exceeding 70kW net".

BS 5449: 1990 "Specification for forced circulation hot water central heating systems for domestic premises".

BS 7671: 2001 "Requirements for electrical installations, IEE wiring regulations, 16th Edition".

Good Practice Guide 284 "Domestic central heating and hot water: systems with gas and oil-fired boilers"; DEFRA, 2000

3.2 Heating controls

In general, heating controls must be installed in line with the best practice guidance provided in 'Central Heating System Specifications, CHeSS (Energy Efficiency Best Practice programme General Information Leaflet 59).

The Submission Spreadsheet enables the calculation of energy savings from heating controls. The savings are calculated by entering the existing controls scenario before installation, and then entering the type of heating controls installed by the project. The spreadsheet assumes different 'packages' of controls, as follows:

Package A: No controls or hot water tank thermostat
Package B: Room thermostat*
Package C: Roomstat & TRV's (thermostatic radiator valves)*
Package D: TRV's without a roomstat*
Package E: Delayed start roomstat and TRV's*
Package F: Intelligent heating controls and TRV's*

* These control options include a hot water tank thermostat. For packages C – F, TRV's are assumed to be fitted on each radiator in the property.

Relevant Standards and guidance documents for heating controls are:

BS 5499: 1990 "Specification for forced circulation hot water central heating systems for domestic purposes".

BS 7671: 1992 "Requirements for electrical installations, IEE wiring regulations, 16th Edition".

Good Practice Guide 302 "Domestic heating Controls"; DEFRA 2001

A lifetime of 15 years is assumed for heating controls.

The Scheme Submission Spreadsheet should be used to calculate the energy savings from heating controls. The spreadsheet contains savings options for either installing heating controls in tandem with a new boiler or installing controls only. The numbers of each type of control package to be installed should be entered into the relevant worksheet. . The results are linked automatically to the main spreadsheet.

The best practice guidance set out in the CheSS document states that thermostatic radiator valves (TRVs) should be fitted on all radiators in a dwelling except in rooms where there is a room thermostat. The number of TRVs that can be fitted in a dwelling is dependent on a number of factors such as the number of radiators present and the number of rooms. To allow flexibility when reporting on heating projects involving TRVs, the EEC Scheme Submission Spreadsheet has a section where the total number of TRVs installed under a scheme can be inputted. The spreadsheet calculates the energy savings by multiplying the number of TRVs installed by the savings attributable to a single TRV.

3.3 Solar Panels

Solar panels, used for the purposes of domestic hot water heating are an eligible measure for use in Levy projects. The lifetime of such measures is assumed to be 20 years.

The tables below illustrate the energy savings attributable to installations of the two different types of solar panel, namely the 'flat plate' and 'evacuated tube' varieties. The savings are presented in two formats. Energy savings for a typical installation are given for the different property types, and the different heating fuels. The savings are also shown on a 'per square metre installed' basis, again for the different heating fuels. Suppliers can enter measures in either format into the Scheme Submission Spreadsheet, using the 'Other Heating' sections of the worksheets.

Suppliers may find it easier to submit new projects using the savings estimates for the different property types. Once projects have been completed it should be possible to calculate the total area of solar panels installed, in which case the 'per square metre' data should be used in the completion report. However if this information is not accurately available, suppliers can also use the property type data when submitting completion reports.

FLAT PLATE COLLECTORS		Water Heating Fuel				
		Gas	Electricity	Oil	LPG	Solid
Average kWh/yr saving per square metre of panel		**454**	**304**	**400**	**441**	**553**
Typical dwelling types, average occupancy levels and typical daily hot water requirements	**l/day**	**Energy Saving (kWh/yr)**				
FLAT 2.1	90.5	**1791**	**1200**	**1579**	**1739**	**2182**
MID-TERRACED 2.6	103	**1824**	**1222**	**1608**	**1771**	**2222**
END-TERRACED 2.6	103	**1824**	**1222**	**1608**	**1771**	**2222**
SEMI-DETACHED BUNGALOW 2.2	93	**1791**	**1200**	**1579**	**1739**	**2182**
DETACHED BUNGALOW 2.3	95.5	**1824**	**1222**	**1608**	**1771**	**2222**
SEMI-DETACHED HOUSE 2.9	110.5	**1824**	**1222**	**1608**	**1771**	**2222**
DETACHED HOUSE 3.3	120.5	**1824**	**1222**	**1608**	**1771**	**2222**

EVACUATED TUBE COLLECTORS		Water Heating Fuel				
		Gas	Electricity	Oil	LPG	Solid
Average kWh/yr saving per square metre of panel		**582**	**390**	**513**	**565**	**709**
Typical dwelling types, average occupancy levels and typical daily hot water requirements	**l/day**	**Energy Saving (kWh/yr)**				
FLAT 2.1	90.5	**2214**	**1483**	**1952**	**2150**	**2697**
MID-TERRACED 2.6	103	**2284**	**1530**	**2013**	**2217**	**2782**
END-TERRACED 2.6	103	**2284**	**1530**	**2013**	**2217**	**2782**
SEMI-DETACHED BUNGALOW 2.2	93	**2214**	**1483**	**1952**	**2150**	**2697**
DETACHED BUNGALOW 2.3	95.5	**2284**	**1530**	**2013**	**2217**	**2782**
SEMI-DETACHED HOUSE 2.9	110.5	**2343**	**1570**	**2066**	**2275**	**2855**
DETACHED HOUSE 3.3	120.5	**2378**	**1593**	**2096**	**2309**	**2897**

4.0 ENERGY EFFICIENT APPLIANCES

4.1 Introduction

As a general rule, efficient cold and wet appliances provided by Levy projects must be 'A' rated, and must also have achieved 'Energy Efficiency Recommended' status, awarded by the Energy Saving Trust's Endorsement Programme. A list of Energy Efficiency Recommended products can be viewed on the Trust's website, at the following link: http://www.saveenergy.co.uk/index.cfm?page=02091900. Energy Suppliers should contact the Trust if further details of the Endorsement Programme are required or if an appliance they wish to use in a scheme does not appear on the Trust's website. The Energy Efficiency Recommended application process for new appliances is straightforward, and qualifying products that have not yet applied can quickly and easily do so.

4.2 Energy saving data used for cold appliance projects

This section explains the methodology for calculating savings for appliance projects. The two most common scenarios for delivering appliance projects are:

an incentive to purchase a more efficient appliance; and
a trade-in of a working appliance.

The lifetime for freezers or fridge-freezers is **15 years**. For refrigerators/larders it is **12 years**, however, when refrigerators/larders are provided to customers classed as falling within the priority group, a lifetime of **15 years** (rather than 12) should be assumed. This is based on the assumption that these customer groups will retain the appliance for a longer time period prior to replacement.

For 'trade in' projects, the lifetime of the appliance must be reduced by 1/3.

The matrix below lists the average annual consumption of different refrigeration appliances by label for products currently on sale in the UK, the sales weighted average and the consumption of existing appliances.

Energy consumption data for cold appliances

Average energy consumption (kWh/a) by appliance and energy label	**'A' rated**	**Sales weighted average**	**Existing appliances**
Fridge Freezer (Standard)	259	438	785
Fridge Freezer (Frost Free)	295	516	
Chest Freezer	150	306	559
Upright Freezer	193	353	594
Refrigerator (Icebox)	138	214	390
Refrigerator (Larder)	127	227	

Source: GfK Q4 2001 sales data for the average 'A' rating and sales weighted average; DEFRA Market Transformation Programme website 2002.

When calculating energy savings for cold appliance projects, suppliers should follow the following guidelines.

4.2.1 Incentive projects

Customers in the market for a new appliance, normally buy the average product currently sold within the range of energy labels. In this scenario they are incentivised to purchase a more efficient appliance. The savings will be the difference between the sales weighted average consumption and the consumption of the promoted product.

For example:

'A' Rated frost free fridge freezer = 295 kWh/a consumption
Sales weighted average for frost free fridge freezer = 516 kWh/a

Energy Saving = 516 - 295 = 221 kWh/a over a 15 year lifetime

4.2.2 Trade In Projects

Under trade-in projects, customers are able to trade in a working appliance for a more efficient appliance. To qualify, the appliance is assumed to be working at the time of trade in and then be destroyed (in an environmentally acceptable manner) to avoid entry into the second hand market. The savings will be the difference between the average consumption of the existing population of that particular product and the more efficient product.

There is a two-fold saving - firstly, by removing the existing, inefficient appliance from the market, the consumption over the remainder of the product life is avoided; and secondly, a more efficient appliance is purchased than would normally be the case. Estimating the remaining lifetime of the existing appliance is subject to considerable uncertainty. On the one hand, it could be argued that only very old appliances will be traded in, so the lifetime will be relatively short. On the other hand, once an appliance enters the second hand market, its lifetime will tend to be longer than the normal average lifetime.

The Energy Saving Trust has analysed a number of scenarios taking account of the two elements of savings. The conclusion is that a simple basis for estimating the total savings from trade in projects is to apply the savings from 'existing appliance' to the promoted product for two thirds of the appliance life.

For example:

An 'A' rated frost free fridge freezer is provided by the scheme = 295 kWh/a consumption

Existing frost free fridge freezer = 785 kWh/a consumption

Energy saving = 785 - 295 = 490 kWh/a over a 10 year (15 year lifetime for a fridge freezer discounted by 1/3) lifetime.

4.2.3 Cold Appliance Disposal

Due to new European legislation concerning ozone depleting substances and their disposal, appliance retailers or delivery agents will no longer remove the old appliance when delivering the new one. Until such a time as this situation is resolved, the appliance will have to remain with the customer. There is considerable risk of these appliances entering the second hand market, even when collected by a Local Authority. To ensure that this does not happen the appliance must be disabled by the following method:

- the appliance's electricity supply cable must be cut, as close to the body of the appliance as possible, or alternatively pulled out of the appliance;
- the gasket (the seal running around the door) must be removed. As this may mean that the door cannot close, the door should be taped or tied shut.

Despite the new legislation, Local Authorities will still have a responsibility to remove domestic appliances from customer's homes. The energy supplier should provide the customer with the relevant contact details.

4.3 Wet Appliances

The following energy consumption figures should be used when considering a scheme that will provide a washing machine or dishwasher. Data is provided that illustrates the average energy consumption of 'A' rated washing machines and dishwashers, and the typical energy consumption of the existing appliances that they will replace in a trade-in scenario. A sales weighted average value is also provided. If the energy consumption of the appliance provided by the scheme is known, this figure can be used in place of the average 'A' rated consumption. The lifetime for these types of appliance is assumed to be 15 years. In a trade in scenario, as with cold appliances, this would be reduced by 1/3.

Washing Machines:
Average 'A' rated energy consumption: 165 kWh/annum
Energy consumption of existing appliances: 237 kWh/annum
Sales weighted average: 210kWh/annum

Dishwashers:
Average 'A' rated energy consumption: 228 kWh/annum
Energy consumption of existing appliances: 415 kWh/annum
Sales weighted average: 297 kWh/annum

Source: GfK home audit; ECI Oxford.

4.4 Jug Kettles

The energy savings derived from the provision of a jug kettle have been calculated as the result of energy monitoring carried out under EESoP I in GB. The result of this monitoring has shown the saving to be 71.9 kWh per annum, if the following criteria are followed:

- The customers targeted should fall within the Priority group.
- The jug kettle must replace a traditional electric kettle (i.e. a kettle that does not have a water meter on the side)
- Advice on the use of the new kettle should be provided (e.g. that the kettle can be used for boiling just one cup of water)

A lifetime of 8 years should be assumed for kettles.

5.0 OTHER RELEVANT LEGISLATION

The following legislation may or may not apply to works carried out during an EEC scheme. The legislation can be reviewed at the following website http://www.hmso.gov.uk/.

As stated earlier, **it is the responsibility of each energy supplier to ensure that they have carried out their projects in accordance with appropriate legislation.**

Construction (Health Safety & Welfare) Regulations 1996

These regulations are aimed at protecting the health, safety and welfare of everyone who carries out construction work. They also give protection to other people who may be affected by the work.

Health and Safety at Work Act 1974

(HASAWA) provides a wide, embracing, enabling framework for health, safety and welfare in the UK.

Construction Design and Management (CDM) Regulations 1994

These regulations have been produced to ensure that Health , Safety and Environmental issues are addressed during the life-cycle of a building or plant.

Control of Substances Hazardous to Health 1994 (COSHH)

This legislation prohibits work involving exposure to hazardous materials (chemicals, microorganisms, gases, etc.) unless a "suitable and sufficient" assessment of these exposures has been carried out.

Noise at Work Regulations 1989

These regulations aim to protect workers from the risk of hearing damage due to excessive noise.

Electricity at Work Regulations 1989

The purpose of these regulations is to ensure precautions are taken against the risk of death or personal injury from electricity in work activities

Environmental Protection Act 1990

The aim of this Act is to ensure that any potential polluting process has an authorisation from either the Environment Agency or Local Authority and that control measures are in place to prevent, minimise or render harmless emissions into the surrounding environment.

Ozone depleting substances (ODS) regulation 2000

This regulation affects users, producers, suppliers, maintenance and servicing engineers, and those involved in the disposal of all ODS. These include chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), halons, 1,1,1 trichloroethane, carbon tetrachloride and bromochloromethane (CBM). These substances are mainly used in refrigeration, air-conditioning, foam blowing, as solvents and in fire fighting.