

ECO-ACTIVE

ENERGY EFFICIENCY SERVICE

Phase 1 Executive Summary

An overview of the work completed by
the Energy Efficiency Service from
January 2009 – January 2011



States
of Jersey


Jersey Electricity

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Foreword

Sir Nigel Broomfield: Chairman of the Jersey Energy Trust

I have had the pleasure of Chairing the Jersey Energy Trust since 2009. It has been an eventful two years. From a standing start, the ECO-ACTIVE Energy Efficiency Service (EES) has delivered a new innovative local service that combines social and environmental benefits. I believe that the States of Jersey and Jersey Electricity plc have shown considerable foresight in approving this important area of work and I am grateful to Jersey Electricity who provided the seed funding that was instrumental in initiating the programme.

Using less energy is the highest priority if we are to achieve the goal of secure, affordable and sustainable energy provision. Reducing energy use means fewer emissions and this is essential if, by 2050, Jersey is to succeed in lowering its carbon emission by 80% compared to 1990 levels in line with our obligations under the Kyoto Protocol.

Although these global objectives are important, we must not lose sight of the very real local benefits of this programme. Vulnerable members of our community are receiving property upgrades that will raise their standard of living and levels of comfort, as well saving them money by reducing their bills. Alongside this is the stimulus to the local economy where jobs in this sector have been secured or created as a result of the volume of work commissioned by the EES.

The first 2 years of the Home Energy Scheme have delivered impressive results. Over the lifetime of the interventions fitted in the scheme's first 2 years 60 million kWh of energy will be saved and 13,500 tones of carbon dioxide emissions will be avoided. There will also be a saving of £4 million in energy bills. This means that for every pound paid out by the programme there is a saving of £5.40 for the consumer.

Although hundreds of vulnerable people have already been helped by the EES, there is much still to do. Our programme continues to help those in our target group who have yet to apply as well as new entrants. It has also extended help to other socio-economically vulnerable groups.

In 2011 the programme was expanded to include those on the Food Costs Bonus Scheme and we are about to invite applications from the Vulnerable Over 70s. The types of interventions that

the scheme can offer were also widened to create a more comprehensive service. Our aim is to deliver help as rapidly as possible without compromising our commitment to high standards of workmanship and customer care.

Another important area of activity has been to provide general energy efficiency advice to the wider public. The programme is now endorsed by the leading UK organisation in this area, the Energy Saving Trust. This autumn we will be publishing an online aerial heat loss map which will give people information about thermal losses from their property and advice on how they can improve the thermal efficiency of their homes or businesses.

The long term future of the Service is promising. Even more progress could be made if it were extended to the able-to-pay sector. Whilst this group needs less financial subsidy, partial grants and education programmes could encourage people to reduce the amount of energy they use..

I and my colleagues on the Energy Trust together with our colleagues in the Energy Efficiency Service will continue to look for cost effective ways of helping to reduce energy consumption and to use energy more efficiently in Jersey. We see that both as a benefit to the individuals concerned but also to the environment which we prize so highly.

Sir Nigel Broomfield

Chairman of the Jersey Energy Trust

July 2011

What is the Energy Efficiency Service?

The Energy Efficiency Service (EES) was officially launched by the Minister for Planning and Environment in April of 2009. It is funded by an annual budget of £1 million from the States of Jersey, as well as a generous seed donation of £500,000 from the Jersey Electricity Company. The scheme provides grant funded energy efficiency improvement measures to socio-economically vulnerable Islanders.



The Minister and Assistant Minister for the Environment, JET Board members and scheme contractors meet recipients of the Energy Efficiency Service Community Buildings Programme in 2009.

The work of the EES is overseen by the Jersey Energy Trust (JET). The JET board provides a key advisory function to the Minister for Planning and Environment on the development of the EES's work programme. Together with the senior management team of the Department of Environment, the JET board provides leadership, independence and oversight on the corporate governance of the EES. The Jersey Energy Trust board is chaired by Sir Nigel Broomfield and comprises individuals from the energy and social sectors locally and Andrea Cook OBE, who also sits on the board of the Energy Saving Trust in the UK.

Based within the Department of Environment at Howard Davis Farm, the team is composed of two full time employees who report to the Director for Environmental Policy. In addition specific areas of technical support are provided by a local energy consultancy.

What does the Energy Efficiency Service provide?

The EES has developed two schemes during its initial Phase – the *Home Energy Scheme* and the *Community Buildings Programme*. They are both entirely new concepts for the Island and have been well received by the respective target audiences. This report concentrates on the Home Energy Scheme.

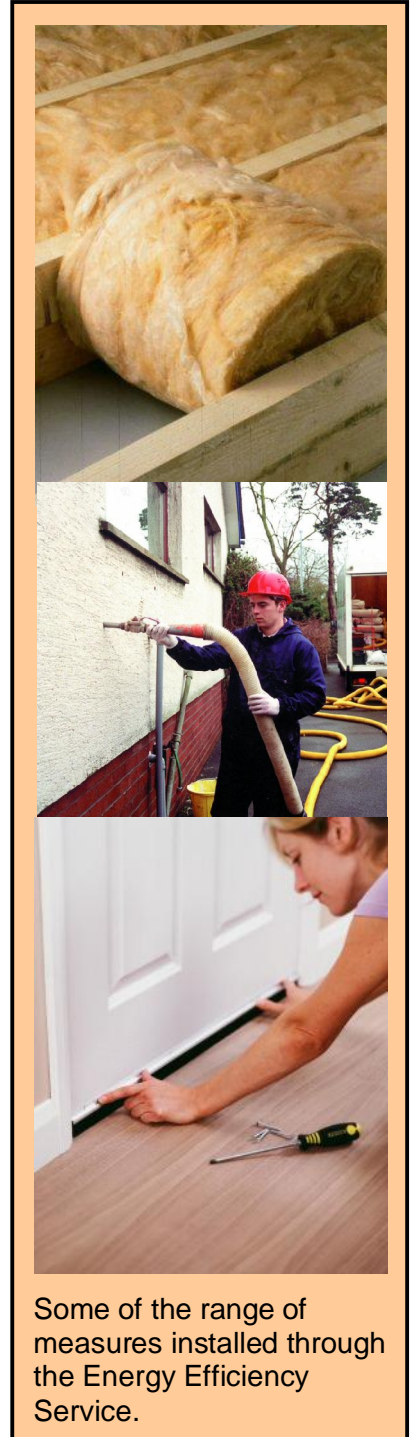
The Home Energy Scheme

The first scheme launched by the EES was the *Home Energy Scheme* which provides a wide range of energy efficiency improvements to socioeconomically vulnerable private households. Given the vulnerable nature of the scheme's recipients, the EES operates a turnkey service in order to minimize the disturbance and disruption that are inevitable when carrying out works in a private home. Applicants are kept up to date through regular written and telephone communications as well as site visits if required.

All works are organised and paid for by EES staff through a selection of approved local contractors. Funding for the scheme began in January 2009 and after the initial development work, two full time staff were appointed by April 2009. The service was delighted to carry out its first energy efficiency works in June 2009. Works that qualify for 100% grant funding through the scheme include:

- Loft insulation
- Cavity wall insulation
- Hot water tank and pipe insulation
- Heating controls
- Draft proofing
- Low energy lamps
- Energy advice and information

In September 2010 the *Heating System Improvement* initiative was introduced as an addition to the basic Home Energy Scheme measures listed above. Designed to improve the efficiency of heating systems by a minimum of 15% the scheme is only open to owner occupiers with heating systems over 10 years old. Given the timing of the initiative's introduction this work program is first revisiting existing applicants, as well as being available to new entrants.



Energy Efficiency Service Key Stats

£772,548 spent on energy efficiency improvements through the Home Energy Scheme

£1,150 average spend per Home Energy Scheme property

3,664 individual measures installed!

2,008MWh of energy saved per annum through measures installed in Phase 1 – that's enough energy to boil around 10 million full kettles!

£160,449 expected reduction in energy bills per annum

430 tonnes of carbon dioxide saved per year – that's the equivalent of around 4300 return flights from Jersey to London!

£133,785 spent on heating system improvements

Energy efficiency projects are underway within **21 charities and not for profit organisations**

570 individuals assisted through **the Community Buildings Programme**

For a full breakdown of energy, cost and carbon savings as well as methodology please refer to the EES Phase 1 Statistics Report.

To date **735 private homes** have received assistance through the Home Energy Scheme. Measures installed to date by the EES are expected to save over 13,500 tonnes of carbon dioxide over their lifetime. Per property these measures contribute to average savings of approximately £239 a year on each of our low income applicant's energy bills. The EES is an important delivery mechanism in terms of the Island's energy security and sustainability strategy and this is demonstrated by the expected annual saving of over 2,000MWh of energy through measures installed to date.

The Community Buildings Programme

In 2010 a second EES work programme was introduced. The *Community Buildings Programme* provides funding for energy efficiency improvements to charities and not-for-profit organizations that provide a service within the local community to our socio-economically vulnerable target group. The measures received by qualifying organizations are similar to those provided in the Home Energy Scheme. To date 21 charities and not-for-profit organisations that provide assistance to over 570 individuals are receiving assistance through the programme. These include:

- *Little Sisters of the Poor*: Independent living apartments, residential and nursing care for over 90 elderly individuals with low income.
 - Loft and cavity wall insulation provided. Heating review underway.
- *Jersey Council on Alcoholism*: Provides half way accommodation for up to 11 adults in recovery from alcohol addiction issues.
 - Loft insulation, draught proofing and low energy lamps provided. Boiler replacement and heating system improvement underway.

- *Les Amis Incorporated:* Offers care and support to adults with learning difficulties in several residential properties.
 - Loft insulation provided to six properties to date. Heating reviews underway.
- *St Ouens Parish Accomodation:* Sheltered housing for 49 elderly parish residents.
 - Loft and cavity wall insulation. Boiler replacement and heating controls improvement in progress.

Setting the standards

The Energy Efficiency Service process does not finish when the works at a property are complete. We pride ourselves on the service we provide to our clients and a quality assurance process is carried out on works at a sample of properties to ensure our works meet necessary standards. All contractors working for the scheme undergo a competitive tender process including checks on qualifications and security to ensure their suitability for our work. Applicants are also invited to complete our feedback process and, if they wish, allow us to access and review their energy bills. The vast majority of our applicants leave positive comments with nearly 97% of respondents rating the EES process as a whole as either good or very good!

The EES has recently undergone an endorsement and verification process by the Energy Saving Trust (EST), the UK's leading impartial organization helping people save energy and reduce carbon emissions. This ensures that all advice provided by the service is delivered by endorsed staff, who have been trained to deliver best practice standard energy saving advice. All facts and figures in consumer facing EES documents are checked by the EST prior to publication; the carbon dioxide and financial savings in this report have been checked and verified by EST using their Jersey specific data.





Cavity wall insulation being carried out in St Brelade.



A freshly insulated section of loft in St Saviour.



An Energy Efficiency Service contractor installs a new smoke alarm.

How have we done?

At the outset of the Energy Efficiency Service a range of Key Performance Indicators (KPIs) were identified. Of the four indicators that have been assessed¹, the EES is meeting or exceeding its requirements in all instances:

- KPI: Deliver 15% reduction in energy use
 - **Achieved:** Average per property saving of 2,989kWh per year equating to 16.9% of average domestic consumption.

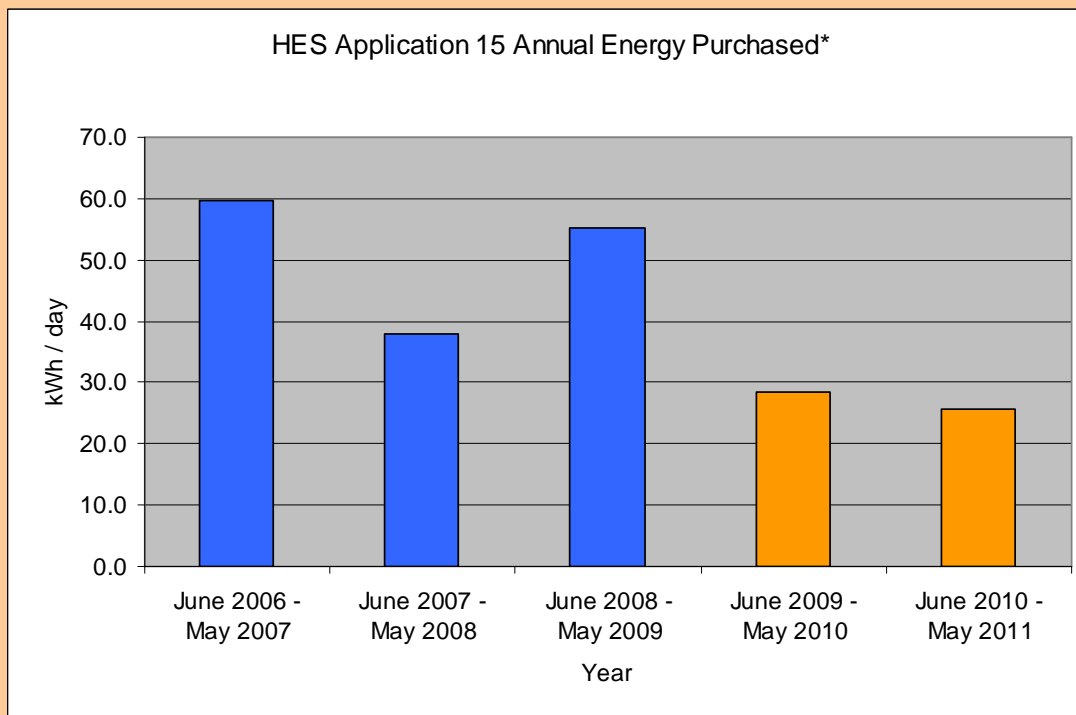
- KPI: Household energy saving of £70 to £250
 - **Achieved:** Average per property bill reduction of £239.

- KPI: Reduce greenhouse gas emissions (CO₂) by 15%
 - **Achieved:** Average per property reduction of 639kg per year equal to 16.1% drop in applicant's 'carbon footprint'

- KPI: Provide improvement to end use of heating energy to at least 800 households
 - HES measures implemented within 735 households as well as 570 individuals through the Community Buildings Programme

¹ The 'improvement in SAP rating' KPI has not been possible to assess.

Case Study: 1950's detached bungalow



Home Energy Scheme Applicant # 15

Owner occupier from St Brelade living in a 1950's detached bungalow with an oil fired wet central heating system.

Works carried out:

- 99 square metres of 200mm thick 'top up' loft insulation
- Loft clearance to facilitate works
- 118 square metres of cavity wall insulation
- Low energy lamp replacements
- Replacement oil fired boiler

Insulation works were completed in December of 2009 with the boiler replacement carried out in December of 2010.

Applicant's feedback comments

"Compliments to all concerned. Very pleased with all that has been done. My bungalow is much warmer. I even turn the stat down. Once again many thanks much appreciated".

* - In contrast to the electricity and gas consumption oil is presented as kWh *purchased* (rather than consumed) *per year* (rather than per quarter) due to the fact that oil purchases are carried out 'in bulk' and quantities purchased during one period can be used in the following period in some instances.



What next?

Beyond these landmarks, the EES has been continually looking to expand its remit and assist in energy awareness and reduction wherever possible. For instance, through attending public events the EES team aims to increase awareness of the assistance available to vulnerable members of the community, as well as providing energy saving advice to the general public.

Through 2011 and into 2012 this type of information provision will be expanded through an energy efficiency advice line open to the general public, an online aerial thermal image showing property heat loss as well as assistance to schools hoping to decrease their energy consumption.

In the long term even greater progress can be made if the Service could be extended into the able-to-pay sector where partial grants and education programmes can help and encourage people to take action on improving their energy efficiency. The forthcoming Energy White Paper is expected to recommend this route as the most cost effective way of achieving the Island's long-term energy reduction targets.

ECO-ACTIVE ENERGY
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This project is a States of Jersey initiative started with a £0.5m donation from Jersey Electricity

ECO-ACTIVE

ENERGY EFFICIENCY SERVICE

Phase 1 Statistics

A detailed analysis of the works completed by the Energy Efficiency Service and their contribution to saving energy in Jersey



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1. Introduction

The Energy Efficiency Service (EES) was initiated in 2009 with agreed funding of £1 million from the States of Jersey and a seed donation of £500,000 from Jersey Electricity. After an initial setup stage, the service was officially launched in April 2009.

The first programme established by the EES was the Home Energy Scheme. This provides a turnkey service to a socio-economically vulnerable target audience, organizing and paying for energy efficiency improvements to low income householders.

In 2010 a second programme was introduced, the Community Buildings Programme, which provides funding for energy efficiency improvements to charities and not-for-profit organizations that provide a service within the local community to our socio-economically vulnerable target audience.

The Energy Efficiency Service is based within the Department of Environment at Howard Davis Farm and is composed of two full time employees who report to the Director for Environmental Policy. In addition specific technical support is provided by a local energy consultancy.

The work of the EES is overseen by the Jersey Energy Trust (JET). The JET board provides an advisory function to the Minister for Planning and Environment on the development of the EES's work programme. Together with the Senior Management Team of the Department of Environment, the JET board provides leadership, independence and oversight on the corporate governance of the EES. The Jersey Energy Trust board is chaired by Sir Nigel Broomfield and comprises individuals from the energy and social sectors locally and Andrea Cook OBE, who also sits on the board of the Energy Saving Trust in the UK.

The EES has recently undergone an endorsement and verification process by the UK Energy Saving Trust (EST). This ensures that all advice provided by the service is delivered by endorsed staff, who have been trained to a set standard enabling them to deliver best practice energy saving advice. All facts and figures in consumer facing EES documents are checked by the EST prior to publication. In addition, the carbon dioxide and financial savings in this report have been checked and verified by EST.



2. Work Programme

2.1 Home Energy Scheme (HES)

- Target audience – households on Income Support or those registered on the Westfield 65+ Health Plan. Householder can be owner-occupier or tenant but not States of Jersey Housing tenant.
- Measures covered – loft and cavity wall insulation, draught proofing, pipe lagging, hot water cylinder lagging, heating controls, low energy lighting, water saving showerheads and toilet cistern retrofits.
- Service provided – 100% funded, turnkey service, work organized and paid for by EES.
- The scheme is divided into two work streams. Flats and house built after 1996 receive the Home Energy Check, a home visit by an energy advisor who focuses on advice on energy saving behaviour and installs basic energy saving measures. Houses and bungalows built before 1996 enter the Home Energy Programme and receive a full energy review.
- Other information – partnership with Fire and Rescue Service to install smoke detectors in properties visited.

2.2 Community Buildings Programme (CBP)

- Target audience – charities and not-for-profit organizations (including parishes) that provide a service to socioeconomically vulnerable islanders.
- Measures covered – loft and cavity wall insulation, draught proofing, pipe lagging, hot water cylinder lagging, heating controls, low energy lighting, water saving showerheads and toilet cistern retrofits, heating system reviews and improvements.
- Service provided – full or partial funding, assessment based on energy savings achievable and payback of the investment. The organisation is required to manage the works.

2.3 Heating System Improvement (HSI)

- Target audience – as with Home Energy Scheme but only available to owner occupiers.
- Measures covered – reviews of heating systems that are over 10 years old and replacement of boilers and electric storage systems that can demonstrate a minimum 15% energy saving.
- Service provided – 100% funded, turnkey service, work organized and paid for by EES.

2.4 Work Programme – statistics summary

Home Energy Scheme

- **Approx. 3,750** target audience households
- **895** applications received
- **666** households have received energy efficiency improvement works
- **69** works in progress
- **160** withdrawn or unsuccessful applications
- **157** eligible individuals have been provided with energy efficiency advice, without having made a formal application to the service

Heating System Improvement

- **c. 550** target audience households (owner-occupiers eligible for HES)
- **197** applications received
- **62** reviews identified heating system did not qualify for assistance
- **44** energy efficiency improvements delivered
- **91** applications in progress

Community Buildings Programme

- **21** applications received including **409** residential units and **170** day care spaces
- **15** buildings have received insulation improvement works
- **30** further works programmes in progress including both insulation and heating improvement.

Key facts

Work Programme

- The Energy Efficiency Service has received funding of **£1million per year** from the States of Jersey since it's pilot year in 2009.
- The Jersey Electricity Company facilitated the inception of the scheme through a **£0.5million** seed donation.
- **735** private households have either received, or are receiving, works to their properties through the **Home Energy Scheme** or **Heating System Improvement** programme.
- **21** charities and not-for-profit organisations that provide assistance to over **570 individuals** are receiving assistance through the **Community Buildings Programme**.

3. Budget and spend

3.1 Budget overview

The EES was allocated an initial £1M budget for a pilot year in 2009. In addition Jersey Electricity Plc provided £0.5M in seed funding, which the EES can draw down from on achievement of defined benchmarks.

In 2010 the States of Jersey introduced Vehicle Emissions Duty to generate revenue for environmental initiatives, including the ongoing funding of the annual £1M budget for the EES.

At 31st January 2011 the EES had spent or committed £1,607,018 since its inception.

EES Budget Overview	End 2009	End 2010	2010 to 31.1.2011	Scheme to date
Spent	£679,464	£656,238	£32,140	£1,367,842
Committed		£203,705	£35,471	£239,176
Total	£679,464	£859,943	£67,611	£1,607,018

3.2 Overheads to grant spend

The EES budget is currently split into two main areas – grants and scheme running costs.

The scheme running costs encompass office set up, staff wages, development of the scheme and services, technical expertise, marketing and the day-to-day running of the service. Costs associated with the delivery of interventions to eligible parties are accounted for in the grants budget. Overheads currently account for 23% of the overall budget with the following two important considerations:

i. Set up costs

The first two years of the scheme have included initial set up costs and engagement of technical consultants in the development of the programme. As the service becomes more established these costs will progressively diminish.

ii. Turnkey service delivery

Over 60% of EES staff time (or costs equivalent to approx. £60,000 annually) is currently spent on delivering the unique turnkey service to the Home Energy Scheme applicants. This includes arranging appointments with householders, communicating between contractors and householders, problem resolution and strict quality assurance processes. Due to the vulnerable nature of this target group, this is integral to delivering the grant work and is a vital part of the service that is provided and therefore should be considered as grant-spend. This allowance results in overheads and scheme administration costs of **15%** of the total scheme expenditure.

Overhead & Grant spend	Scheme to date	Per month over 25 months	Moving £120,000 EES staff costs to grants
Overheads spent	£351,371	£14,055	£231,371
Overheads committed	£12,914		
Overheads total	£364,285	£14,571	£244,285
Grants spent	£1,016,471	£40,659	£1,136,471
Grants committed	£226,262		
Grants total	£1,242,733	£49,709	£1,362,733
Total	£1,607,018	£64,281	£1,607,018
Overheads as % of spend	23%	23%	15%

Key facts

Home Energy Scheme

- A total of **£772,548** was spent on the Home Energy Scheme, delivering energy efficiency improvements and advice to our vulnerable target group.
- Across the **672** applications this equates to an average spend of **£1,149.60** per property
- 88% of the cost spent directly on intervention measures (3,664 individual measures completed)
- 9% of costs on surveyor reports and quality assurance checks
- 3% on home energy checks and advice provision

Heating System Improvement

- A total of **£133,785** was spent on heating system improvements
- Across **44** completed properties this equates to an average spend of **£3,041** per property
- NB Quality assurance costs on this work will accrue in 2011 budget

Community Buildings Programme

- Projects are currently underway on 21 Community Buildings with spend at £101,076 (these projects are only partially completed)

4. Improvements delivered through the Home Energy Scheme

4.1 Data recording

In late 2010 the EES introduced a Client Relationship Management database (CRM) to provide an effective tool for the administration, management and reporting of the different work programmes.

Section 4 summarises the data currently captured by the CRM on the measures that have been installed by the EES as part of the Home Energy Scheme. Work in progress at the time of writing has not been accounted for.

Final figures are only entered onto the CRM when the work and the quality assurance processes are complete. In this section of the report the spend figures presented are those as recorded in the CRM. Some variance exists between these figures and the service spend recorded within the budget.

Note that the measures installed under the Community Buildings Programme work are not accounted for in the figures below.

4.2 Energy, fuel cost and carbon savings delivered

Estimations of the energy, cost and carbon savings associated with the measures installed under the Home Energy Scheme and Heating System Improvement scheme are also provided in this section.

All savings figures have been verified by the UK Energy Saving Trust subject to certain assumptions and provisos. Please refer to the Appendix for further details as well as the assumptions behind these figures. The Energy Saving Trust has not verified any data relating to numbers or costs of installations.

Note that the energy, cost and carbon dioxide savings for the Community Buildings Programme work are not accounted for in the figures below.

4.3 Energy, fuel cost and carbon saving matrices

The summary matrices in Section 4.3 provide an overview of the installations completed by the Energy Efficiency Service as well as the savings resulting from these works. These tables show the actual savings for the measures installed in the properties both on an annual basis, and over the lifetime of the installation. Many measures will show significantly lower savings than the "typical" figures presented in the Appendix (Section 7.3) due to variations in property and fuel types, and due to the proportional reduction that can apply when installing multiple measures in the same property.

4.3 Energy, fuel cost and carbon savings matrices

	No. of properties receiving measure	Gross quantity of measure installed	Per measure, per year			Total for installed measures, per year				Payback (years)	
			EES spend per measure £	Energy saved, kWh/yr	Energy costs saved, £/yr	CO2 saved, kgCO2/yr	EES spend on measures £	Energy saved, kWh/yr	Energy costs saved, £/yr		CO2 saved, kgCO2/yr
Home Energy Scheme measures											
Loft Insulation	325	20,619 sq.m	£923	2,939	£195	706	£299,969	955,182	£63,408	229,476	4.7
Cavity Wall Insulation	106	9,999 sq.m	£893	2,560	£170	615	£94,614	271,411	£18,017	65,205	5.3
Draught Proofing	165	1889m	£101	191	£13	46	£16,662	31,452	£2,088	7,556	8.0
Hot water cylinder jacket	42	42 units	£95	799	£61	150	£3,997	33,538	£2,561	6,299	1.6
Replacement hot water cylinder	62	62 units	£938	799	£61	150	£58,126	49,508	£3,781	9,299	15.4
All heating controls	147	982 units	£364	500	£35	110	£53,520	73,553	£5,156	16,235	10.4
Pipework lagging	167	2015m	£110	297	£21	64	£18,320	49,648	£3,544	10,626	5.2
Other works							£26,187				
Home Energy Check	190	190 units	£125	596	£47	73	£23,709	113,240	£8,877	13,896	2.7
Low energy light bulbs	377	15507 units	£4	17	£2.70	1.9	£63,006	267,372	£41,352	28,920	1.5
Home Energy Scheme Total							£658,111	1,844,903	£148,783	387,512	4.4
Heating System Improvement	44		£3,041	3,714	£265	946	£133,785	163,410	£11,666	41,646	11.5
TOTAL							£791,896	2,008,313	£160,449	429,157	4.7

	Per measure, over lifetime of measures				Total for installed measures, over lifetime of measures				
	No. of measures	Av cost per measure	Energy saved, kWh	Costs saved, £	CO2 saved, kgCO2	Cost, £	Energy saved, kWh	Costs saved, £	CO2 saved, kgCO2
Home Energy Scheme measures									
Loft Insulation	325	£923	117,561	£7,804	28,243	£299,969	38,207,261	£2,536,313	9,179,058
Cavity Wall Insulation	106	£893	102,419	£6,799	24,606	£94,614	10,856,426	£720,682	2,608,189
Draught Proofing	165	£101	3,812	£253	916	£16,662	629,046	£41,758	151,124
Hot water cylinder jacket	42	£95	9,582	£732	1,800	£3,997	402,452	£30,735	75,588
Replacement hot water cylinder	62	£938	9,582	£732	1,800	£58,126	594,095	£45,371	111,583
All heating controls	147	£364	6,004	£421	1,325	£53,520	882,634	£61,874	194,816
Pipework lagging	167	£110	2,973	£212	636	£18,320	496,485	£35,437	106,264
Other works			-	£0	-	£26,187	-	£0	-
Home Energy Check	190	£125	1,192	£93	146	£23,709	226,480	£17,753	27,793
Low energy light bulbs (units)	15507	£4	374	£59	40	£63,006	5,801,966	£897,329	627,553
Home Energy Scheme Total						£658,111	58,096,844	£4,387,253	13,081,969
Heating System Improvement	44	£3,041	44,566	£3,182	11357.89	£133,785	1,960,918	£139,992	499,747
TOTAL						£791,896	60,057,762	£4,527,245	13,581,716

Future savings have not been discounted.

Key Facts

Scheme savings

- **£791,896** of Home Energy Scheme and Heating System Improvement work has been assessed by the Energy Saving Trust to identify the likely energy efficiency improvements resulting from grant funding.
- Measures installed deliver total annual savings of:
 - **2,008,313 kWh** of energy
 - **£160,449** in energy bill reductions
 - **429,157kg** of carbon dioxide
- This provides a payback of **4.9 years** on the direct investment of the cost of the measures
- Over the lifetime of the installed measures they will deliver total energy savings of:
 - **60,057,762 kWh** of energy
 - **£4,527,245** in energy bill reductions
 - **13,581,716 kg** of carbon dioxide

Per property savings

- Average savings per annum as a result of Home Energy Scheme and Heating System Improvement work are:
 - **2,989 kWh** of energy per property
 - **£239** in energy bill reductions per property
 - **639 kg** of carbon dioxide per property
- Over the lifetime of the installed measures they will deliver energy savings of:
 - **89,372 kWh** of energy per property
 - **£6,737** in energy bill reductions per property
 - **20,211 kg** of carbon dioxide per property

5. Scheme paybacks on investment

5.1 Grant spend

Using the estimated energy, cost and carbon savings calculated Section 4, it is possible to analyse the overall effectiveness of the Energy Efficiency Service in terms of payback on the funding invested in the service as a whole. In simple terms, this can be considered as the length of time required for the savings in energy cost to equal the cost of the energy saving installations.

The figures in this section include all costs associated with the Energy Efficiency Service as recorded in the section's accounts. This therefore discounts all work that is currently in progress under the Home Energy Scheme as this is not recorded within the CRM until the projects have been fully complete and signed off. Community Buildings projects are also not considered within the CRM. As the energy, cost and carbon dioxide savings resulting from these works are not accounted for within the previous section's analysis there are slight differences in the grant spend payback period between Sections 4 and 5.

	Spend	Energy saved, kWh/yr	Costs saved, £/yr	CO ₂ saved, kgCO ₂ /yr	Payback	Notes
Home Energy Scheme						
Energy reports & QA	£67,920	0	£0	0	0.0	No attributable energy savings
Home Energy Package (HEP) – all works	£587,880	1,731,663	£139,906	373,616	4.2	
Home Energy Checks (HEC) – all works	£23,709	113,240	£8,877	13,896	2.7	
HEP works not yet recorded in CRM	£46,517	0	£0	0	0	Savings not yet calculated
Light bulb purchasing	£46,522	0	£0	0	0	Savings included within HEP data
Total	£772,548	1,844,903	£148,783	387,512	4.9	
Heating system improvement	£133,785	163,410	£11,666	41,646	11.5	
Community buildings programme	£101,076	0	£0	0	0	Savings not yet quantified
Miscellaneous costs and expense	£9,061	0	£0	0	0	No attributable energy savings
TOTAL GRANT SPEND	£1,016,470	2,008,313	£160,449	429,157	6.3	

The current estimated payback on the £1,016,470 invested in the EES grant budget is 6.3 years.

5.2 Overhead spend

As the EES overhead costs are all those involved in developing, administering, staffing and marketing the energy efficiency programmes, no direct energy and carbon savings can be attributed to this area of spend. As these figures cover the first couple of years of the service and its initial development and set up costs it is expected that these will decrease relatively over time.

Note that an estimated 60% of EES staff time is spent directly on supporting the turnkey service delivery of the Home Energy Scheme. Due to the vulnerable nature of this initial target group this 'hands on' approach is necessary. The staff time needed to support the delivery of future programmes to the able-to-pay market should be considerably less and therefore the savings delivered per pound invested will increase

In addition, any indirect savings that have resulted from the increased awareness of energy efficiency in the Island through the marketing and outreach work and telephone advice that the EES has provided has not been quantified.

5.3 Total EES spend

Looking at the Energy Efficiency Service spend as a whole the payback on investment is 8.6 years. This compares favorably to an expected lifetime in excess of twenty years for the majority of major measures installed.

	Spend	Energy saved, kWh/yr	Costs saved, £/yr	CO ₂ saved, kgCO ₂ /yr	Pay back	Notes
Overheads, administration and management	£351,371	0	0	0	0	Overhead costs should reduce with time
Grants	£1,016,471	2,008,313	£160,449	429,157	6.3	Savings from all interventions not yet calculated
EES SPEND TOTAL	£1,367,842	2,008,313	£160,449	429,157	8.6	

6. Key Performance Indicators and Case Studies

At the outset of the Energy Efficiency Service a range of Key Performance Indicators (KPIs) were identified. Of the four indicators that have been assessed¹, the EES is meeting or exceeding its requirements in all instances:

- KPI: Deliver 15% reduction in energy use
 - Average per property saving of 2989kWh per year equating to 16.9% of an average Jersey household's useful energy consumption (17,694kWh).
- KPI: Household energy saving of £70 to £250
 - Achieved: Average per property bill reduction of £239.
- KPI: Reduce greenhouse gas emissions (CO₂) by 15%
 - Achieved: Average per property reduction of 639kg per year equal to 16.1% of an applicant's 'carbon footprint' (average Jersey household CO₂ emissions are 3,967kg per year)
- KPI: Provide improvement to end use of heating energy to at least 800 households
 - HES measures implemented within 735 households as well as 570 individuals through the Community Buildings Programme

Beyond these landmarks the EES has been continually looking to expand its remit and assist in energy awareness and reduction wherever possible. For instance, through attending public events the EES team aim to increase awareness of the assistance available to vulnerable members of the community as well as providing energy saving advice to the general public. Through 2011 this type of information provision will be expanded through an energy efficiency advice line open to the general public, an online aerial thermal image showing property heat loss as well as assistance to schools hoping to decrease their energy consumption.

The KPIs provide a good overview of the scheme's performance as a whole, but one of the most telling indications of the scheme's impact is often through the testament of the applicants themselves (example below). The service receives many letters and calls from scheme recipients highlighting the positive effects of the measures installed. The following case studies are intended to highlight some of the 'per property' benefits that the scheme generates.

"Congratulations on a job well done. All the people concerned were efficient and cleaned up any mess that was made. I would highly recommend anybody to take advantage of this service. I now look forward to the reduction in my service charges."

¹ The 'improvement in SAP rating' KPI has not been possible to assess.

Case Study 1

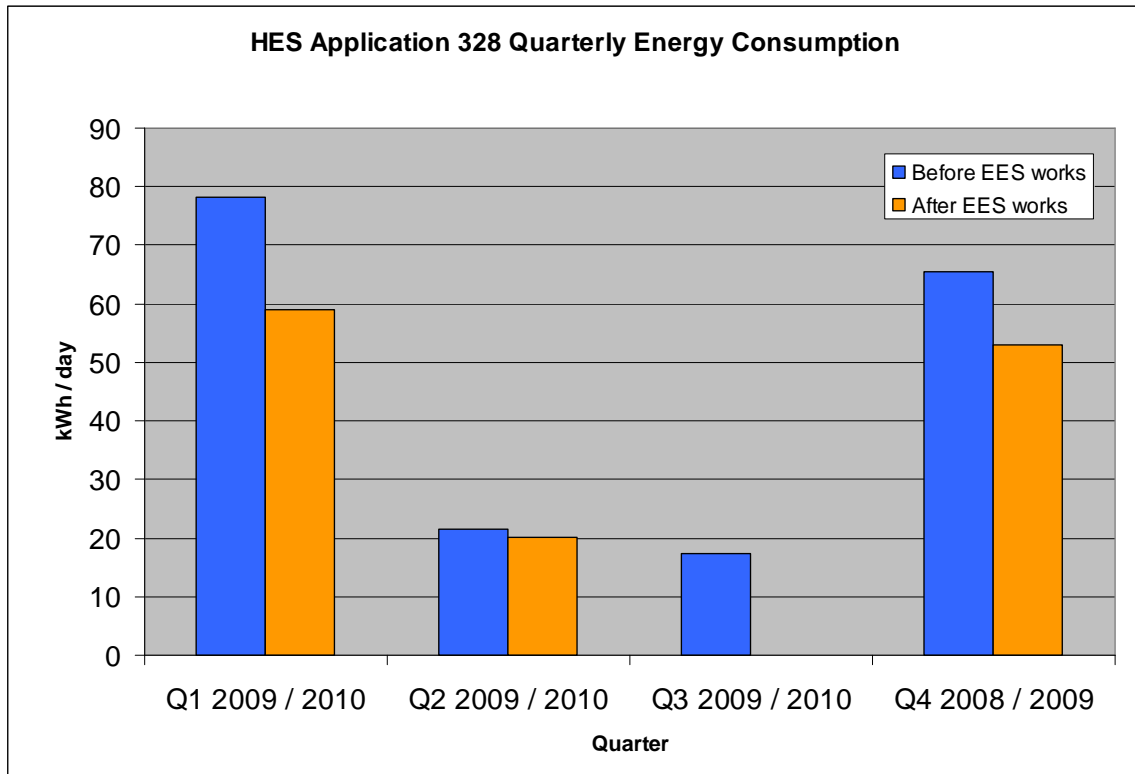
Home Energy Scheme Applicant # 328

Owner occupier from St Clement living in a 1970's house with electric storage heaters and a coal fire.

Works carried out:

- 61 square metres of 200mm thick 'top up' loft insulation
- Loft clearance and insulation of cold water storage tank to facilitate works
- 143 square metres of cavity wall insulation
- Hot water pipework lagging
- Low energy lamp replacements

Works were completed in Quarter 4 of 2009.



Applicant's feedback comments

"... to insulate the loft they moved whatever was up there and put it back very tidy, they also covered the plumbing. For the cavity walls ... I cannot say how much we appreciate the work they did and would recommend them for there work to anyone, very tidy and efficient. The overall effect was almost instant I have been able to lower the heating straight away. Many thanks to you all."

Case Study 2

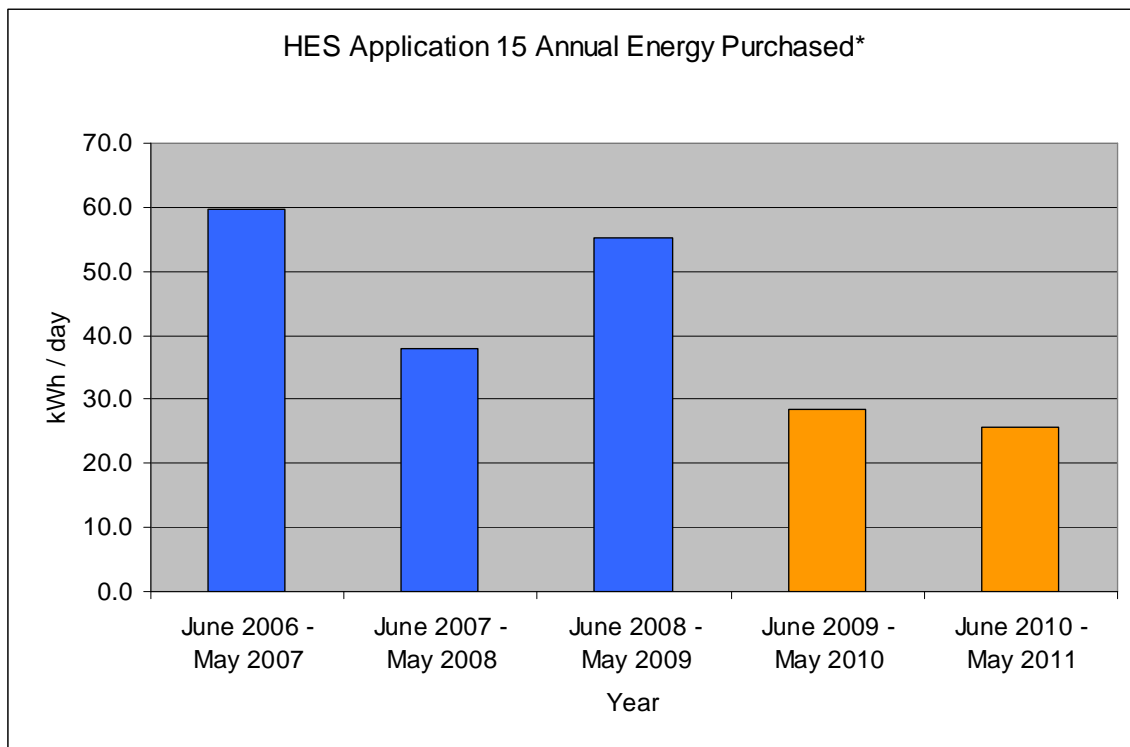
Home Energy Scheme Applicant # 15

Owner occupier from St Brelade living in a 1950's detached bungalow with and oil fired wet central heating system.

Works carried out:

- 99 square metres of 200mm thick 'top up' loft insulation
- Loft clearance to facilitate works
- 118 square metres of cavity wall insulation
- Low energy lamp replacements
- Replacement oil fired boiler

Insulation works were completed in December of 2009 with the boiler replacement carried out in December of 2010.



* - In contrast to the electricity and gas consumption graphs oil is presented as kWh *purchased* (rather than consumed) *per year* (rather than per quarter) due to the fact that oil purchases are carried out 'in bulk' and quantities purchased during one period can be used in the following period in some instances.

Applicant's feedback comments

"Compliments to all concerned. Very pleased with all that has been done. My bungalow is much warmer. I even turn the stat down. Once again many thanks much appreciated".

Case Study 3

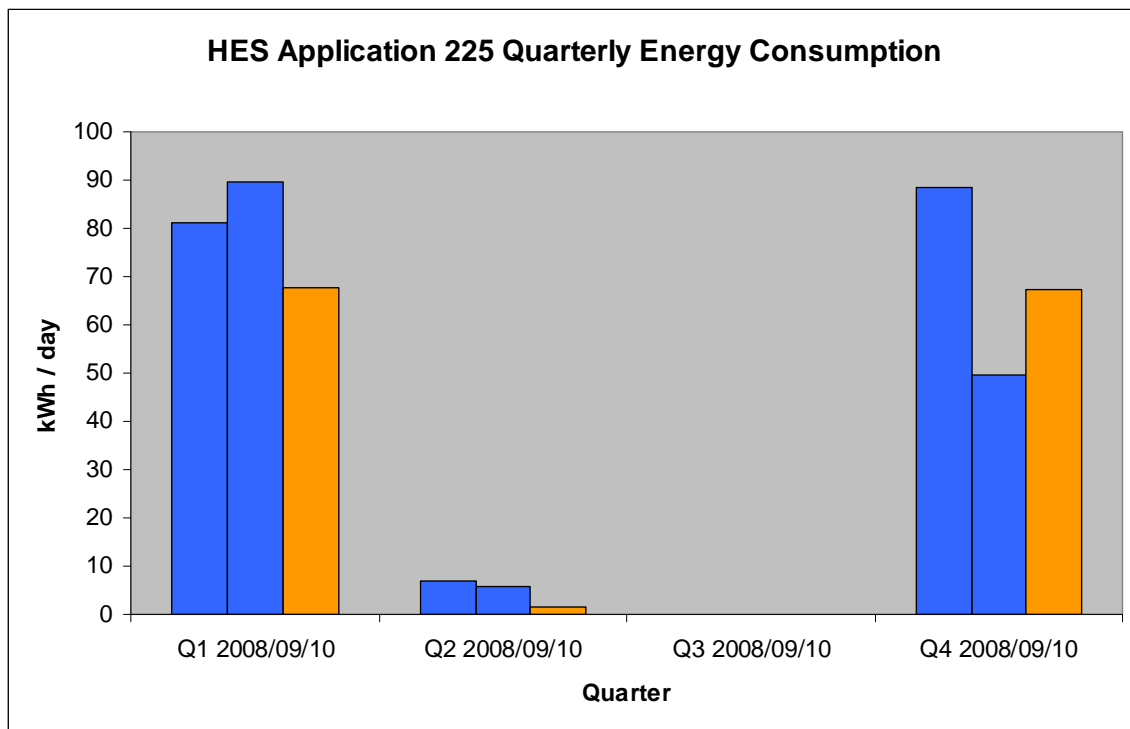
Home Energy Scheme Applicant # 225

Owner occupier from St Clement living in a semi-detached solid brick cottage (circa 1890) with gas fired wet central heating system.

Works carried out:

- 95 square metres of 200mm thick 'top up' loft insulation
- Loft clearance and cold water tank insulation to facilitate works
- Draught stripping to exterior door
- Thermostatic radiator valves x 10 (heating controls)
- Low energy lamp replacements

Works were completed in December of 2009.



Applicant's feedback comments

*How do you rate the energy efficiency service process as a whole?
5 / 5 – Very Good!*

7. Forward Look

In the next 12 months the Energy Efficiency Service is looking to continue to provide the Home Energy Scheme to socio-economically vulnerable Islanders. The eligibility criteria have been extended to additional groups of vulnerable Islanders whilst additional effort is being directed at increasing applications from current non-responders. This will remain a 100% funded, turnkey service and will include heating system reviews and boiler replacements where the criteria are met. As such this will remain a labour intensive service, with relatively high overhead costs.

The Community Buildings Programme will continue to provide its current service to charities and not-for-profit organisations

The Energy Efficiency Service will also be expanding its services into the able-to-pay market. Initially this will be through the provision of energy efficiency advice to the general public, delivered through a telephone advice line, educational tools, such as an aerial thermal imaging map of the Island and home energy audits.

The intention is also to a pilot scheme to provide vouchers or subsidies as incentives for Islanders to carry out energy efficiency improvements themselves. Such an approach should enable us to deliver greater savings per pound invested in energy efficiency.

In the long term even greater progress can be made if the Service could be extended into the able-to-pay sector where partial grants and education programmes can help and encourage people to take action on improving their energy efficiency. The forthcoming Energy White Paper is expected to recommend this route as the most cost effective way of achieving the Island's long-term energy reduction targets.

8. Appendix

Energy, cost and carbon dioxide saving assumptions and limitations

8.1 UK Benchmark energy saving statistics

	EST*			CERT**					
	kWh/yr saved	Annual Saving (£) per property	Annual CO2 Savings (kg) per property	kWh/yr saved	Annual Saving (£) per property	Annual CO2 Savings (kg) per property	Lifetime, yrs	Lifetime savings per measure, £	Lifetime CO2 saving per measure, tC
Loft insulation (0-270mm)	3946	£145.00	730						
Loft insulation (50-270mm)	1135	£40.00	210						
Loft insulation				1489	£38.41	313.36	40	£1,536	12.53
Cavity Wall Insulation	3027	£110.00	560	3012	£77.86	634.36	40	£3,114	25.37
Draught proofing	649	£25.00	120	631	£16.30	132.81	20	£326	2.66
Hot water cylinder jacket	919	£35.00	170						
Electrical room thermostat	1514	£55.00	280						
Hot water cylinder thermostat	595	£20.00	110						
All heating controls (properties)				1457	£34.62	282.41	12	£415	3.39
Pipework lagging	324	£10.00	60						
Boiler replacement	5946	£225.00	1100						
CFLs (per light bulb)	28	£2.50	15	8	£2.08	8.07	17.7	£10	0.14
Home energy advice	1671	£60	310						

* Source: Energy Saving Trust, 2011, www.est.org.uk

** Source: EXPLANATORY MEMORANDUM TO THE ELECTRICITY AND GAS (CARBON EMISSIONS REDUCTION) ORDER 2008

- EST electricity prices taken at 12.5p/kWh.
- EST insulation assumption based on gas heated semi-detached house with 3 bedrooms. The savings are the same as those used for CERT and assume a gas price of 3.67p/kWh. Savings also include a reduction factor for 'comfort taking'.
- Savings for the condensing boiler upgrade are for changing from an old G rated boiler to an A rated condensing boiler and a full set of heating controls.
- Figure of 1671 kWh for home energy advice taken from Energy Efficiency Partnership for Homes, EP24, EST 2005 'Energy conscious behaviour saves money'.
- Savings for low energy light bulbs (CFLs) include an allowance for the Heat Replacement Effect. This makes an allowance for the fact the inefficient bulbs provide additional heat to the property which is sometimes useful. The gross saving from replacing the bulb is reduced to allow for the small amount of additional space heating that will be required.

8.2 Adaptations to the Jersey situation

Energy saving from efficiency measures, kWh / yr

Average temperatures in Jersey are warmer than the UK average, and there are a number of other factors that could also impact on typical energy requirements and hence on likely savings. Comparing Jersey statistics with UK statistics, the average domestic space heating requirement is 9.8% less than the UK average. All UK savings for space heating measures have therefore been reduced by a factor of 9.8% for Jersey.

Typical properties in Jersey

Both the EST and CERT cost and carbon saving figures are based on a 3-bed semi-detached property with gas central heating.

UK energy use by fuel type	Energy consumed, PJ	%
Electric	406	22
Gas total	1307	71
Oil	105	6
Solid	30	2
All	1848	100

Source: BRE Domestic Energy Fact File 2008

As 71% of domestic energy use in the UK is from gas it is reasonable to use gas figures for the average property.

Jersey domestic energy use by fuel type	Space heating %	Water heating %	Average
Electricity	40	48	44
Gas	13	12	12.5
Oil	38	34	36
Coal / solid fuel	3	1	2
Combination	6	5	5.5

Source: Jersey Annual Social Survey 2006

However, in Jersey as the space heating fuel mix is 40% electricity, 38% oil and 13% gas it would be inappropriate to use gas as the fuel type for the average property.

The majority of homes in Jersey are either oil heated detached houses or electrically heated flats. Given the current focus of this scheme on privately owned properties, an oil heated three bedroom detached house has been used to determine typical savings.

Actual savings for evaluations of the scheme have been based, wherever possible, on actual fuel and property type for the home where the measure was installed. Where this information was not available, the average Jersey fuel mix for the property type (house or flat) was used.

Energy price and carbon emissions factors

The unit prices and the carbon emissions factors for energy in Jersey are different from the UK and therefore it is not appropriate to use the UK figures, as illustrated in the tables below.

UK fuel prices and CO2 factors	Gas	Oil	LPG	Coal	Electricity (Ec 7)	Electricity (standard)
Average price (pence / kWh)	3.67	4.42	6.15	3.53	7.41	12.5
Carbon dioxide factor (kgCO ₂ /kWh)	0.185	0.246	0.214	0.296	0.539	0.539

Source: www.energysavingtrust.org.uk/energy-saving-assumptions

Fuel	Gas	Oil	LPG	Coal	Electricity (Off peak)	Electricity (standard)
Average price (pence / kWh)	2.32	3.17		2.65	3.77	9.09
Carbon dioxide factor (kgCO ₂ /kWh)	0.1899	0.2493		0.2996	0.4308	0.4308

Source: EXPLANATORY MEMORANDUM TO THE ELECTRICITY AND GAS (CARBON EMISSIONS REDUCTION) ORDER 2008 No. 188

Jersey fuel prices as at 23.2.11	Gas (Standard 24)	Gas (Super Economy 24)	Oil	Coal	Electricity (standard rate)	Electricity (Ec 7)	Electricity (comfort heat rate)
Average price (pence / kWh)*	13.40-16.20	10.09-11.00	4.44	6.35	12.44	6.55	6.82

Source: Gas and electricity prices taken from Jersey Gas and JEC website published tariffs on 23.2.11. Oil price taken from Consumer Council Newsletter, Dec 2010, average price at 10.11.10. Oil prices 52.55 p per litres converted by 11.84kWh/litre.

The oil price calculation above includes an error – the gross calorific value of kerosene heating oil is 10.31 kWh/litre, not 11.84. Correcting for this, the following price and carbon dioxide factors have been used throughout this report:

	Gas	Electric (E7)	Oil	Solid fuel	Electric (Standard)
Average Price (p/kWh) inc GST	11.33	7.85	5.10	6.35	12.44
CO ₂ Factor (kgCO ₂ /kWh)	0.234	0.092	0.265	0.291	0.092

Carbon emission factors taken from the JerseySAPv1 tool, except electricity which is the figure agreed by Carbon Trust.

Limitations

Assessment of savings has been based on recorded data where available. However, there are significant gaps in the data, particularly to do with heating fuel and size of property. For some properties it is clear what the heating fuel is (for example if a new oil boiler has been installed) but for other properties this information is not available and so savings have been based on the appropriate Jersey fuel mix.

Savings figures are also based on assumptions about what was in place prior to installation. In most cases reasonable assumptions can be made about the likely efficiency of the pre-existing system or fabric. However there is considerable uncertainty surrounding loft insulation.

Installers recorded the thickness of insulation added, but they did not record the level of insulation already in place, if any. This can impact on the savings achieved by a factor of more than 30 in some circumstances. To minimize the error in the estimated savings a mix of possible installation scenarios was assumed. However it is possible that the savings from loft insulation have been significantly over- or under-estimated.

Combinations of Measures

Some measures will, if installed, have an impact on the effect of other measures in the same property. This is one reason why the scheme has been assessed on a property by property basis, rather than by applying average measure savings across the board. However, this also has the affect of exaggerating the apparent significance of some measures in relation to other measures, depending on the order in which the savings are applied.

In this assessment, insulation and draughtproofing measures have been assessed as if applied first. The savings from boiler replacement are then assessed as if applied to an insulated property (which reduces the savings compared to a “standard” saving). Heating controls are applied last, and so their impact is reduced further.

This ensures that the total saving is not over-estimated. However it does have the effect of increasing the apparent payback for heating control measures and reducing it for insulation and draughtproofing measures. The payback figures quoted for individual measures should not be relied on heavily in making comparisons between the cost effectiveness of different options.

8.3 Energy, cost and carbon emissions savings per installed measure in Jersey

This table shows likely savings for individual measures installed in a typical 3 bedroom oil heated detached house. This is for illustration only. It gives a good indication of the relative significance of different measures, but the figures have not been used in assessing the scheme.

	Annual savings			Lifetime of measure, yrs	Lifetime savings		
	Energy saved, kWh/yr	Costs saved, £/yr	CO2 saved, kgCO2/yr		Energy saved, kWh	Costs saved, £	CO2 saved, kgCO2
Loft insulation (0-270mm)	3,967	£202	1,051	40	158,669	£8,092	42,047
Loft insulation (50-270mm)	1,190	£61	315	40	47,582	£2,427	12,609
Cavity Wall Insulation	4,276	£218	1,133	40	171,053	£8,724	45,329
Draught proofing	624	£32	165	20	12,486	£637	3,309
Hot water cylinder jacket	801	£41	212	12	9,616	£490	2,548
Hot water cylinder replacement	801	£41	212	12	9,616	£490	2,548
Electrical room thermostat	1,976	£101	524	12	23,717	£1,210	6,285
Hot water cylinder thermostat	349	£18	92	12	4,182	£213	1,108
All heating controls (properties)*	2,564	£131	680	12	30,772	£1,569	8,154
Pipework lagging	251	£13	67	10	2,514	£128	666
Boiler replacement	7,478	£381	1,982	10	74,780	£3,814	19,817
CFL (per light bulb)	17	£2.70	1.86	21.7	374	£59	40
Home Energy Check	1,507	£77	399	2	3,014	£154	799
Other work (water efficiency, smoke detectors, misc works)	0	£0	0	0	0	£0	0

Figures are from EST's typical savings for UK properties, adjusted for Jersey average heating demand, fuel prices and CO₂ factors. Actual savings in individual properties will vary. Some savings from individual measures will be less when installed in combination with other measures. See Appendix 1 for further details.

8.4 Grant spend

The table below provides a breakdown of the Grant budget line between the three different programmes currently delivered by the Energy Efficiency Service.

Grants spend breakdown	End 2009	End 2010	2011 to 31.1.2011	Scheme to date
<i>Home Energy Scheme breakdown</i>				
Energy reports & Quality Assurance (QA) checks	£63,199	£1721	£3000	£67,920
Home Energy Package – all works	£441,264	£182,496	£8,972	£632,732
<i>Home Energy Package - works on CRM</i>				<i>£587,880</i>
<i>Home Energy Package - works not yet on CRM</i>				<i>£44,852</i>
Home Energy Checks – all works	£14,722	£10,652		£25,374
<i>Home Energy Checks - works on CRM</i>				<i>£23,709</i>
<i>Home Energy Checks - works not yet on CRM</i>				<i>£1,665</i>
Light bulb purchasing	£17,477	£29,045		£46,522
Total Home Energy Scheme				£772,548
Heating System Improvement		£124,117	£9,668	£133,785
Community buildings programme		£101,076		£101,076
Miscellaneous costs and expenses	£51	£9010		£9061
TOTAL	£536,713	£458,118	£21,640	£1,016,470

ECO-ACTIVE ENERGY EFFICIENCY SERVICE



This project is a States of Jersey initiative started with a £0.5m donation from Jersey Electricity