States of Jersey

Energy Efficiency Service

Phase 1 Report

February 2011

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 socioeconomically 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 socioeconomically 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 Assistant Director for Environmental Policy. In addition technical support is provided by a local energy consultancy and administrative support to the service is bought in on an ad hoc basis.

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 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.

2. Work Programme

2.1 Home Energy Scheme

- Target audience – households on Income Support or those registered on the Westfield 65+ Westfield 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 toiler 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.

- Marketing – direct mailout to eligible households via Social Security Department

- Other information – partnership with Fire and Rescue Service to install smoke detectors in properties visited.

2.2 Community Buildings Programme

- 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. Organisation is required to manage works.

- Marketing – mailouts, local media advertising, Jersey Association of Charities

2.3 Heating System Improvement

- 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 that are under 70% efficient with A-rated condensing boilers.

- Service provided – 100% funded, turnkey service, work organized and paid for by EES.

- Marketing – direct mailout to eligible households.

2.4 Work Programme – statistics summary

WORK STREAMS	End 2009	End 2010	2011 to 31.1.2011	Scheme to date
Home Energy Scheme (HES)				
Target audience	1754	3750	3750	3750
Advice provided w/o application	**106**	**51**	**0**	**157**
Applications received	**667**	**210**	**18**	**895**
Withdrawn / unsuccessful	109	46	5	160
Energy efficiency improvements delivered	248	398	20	666
In progress at end of period	310	76	69	69
In progress - work ordered			39	39
*Properties with measures on CRM**				672
Home Energy Package (houses & bungalows built pre-1996)				511
Home Energy Check (flats & houses built post-1996)				127
HEC - HEP				92
Heating System Improvement				
Target audience (owner-occupiers eligible for HES)	n/a	c550	c550	c550
Applications received	n/a	173	24	197
Not eligible for assistance	n/a	32	0	32
Energy efficiency improvements delivered	n/a	27	17	44
In progress	n/a	114	133	121
In progress - work ordered		17	6	23
Community Buildings Programme				
Applications received (Organisations)	n/a	21	0	21
Applications received (Residential units)	n/a	**409**	**0**	**409**
Applications received (Day care spaces)	n/a	**170**	**0**	**170**
Not eligible for assistance	n/a	0	0	0
Insulation work complete (organisation)	n/a	14	1	15
Heating system work complete (organisation)	n/a	0	0	0
Additional work in progress	n/a	19	19	19
Work in progress (open orders)	n/a	9	11	11
Total households / residential units / day care spaces providing assistance to	**773**	**840**	**18**	**1631**

**Properties with data on client management database – see further explanation in section 4*

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	2011 to 31.1.2011	Scheme to date
IEP040 Spent & Committed				
Spent	£679,464	£656,238	£32,140	£1,367,842
Committed		£203,705	£239,176	£239,176
Total	£679,464	£859,943	£271,316	**£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 but the following two points are important:

1. Set up costs

It should be noted that the first two years of the scheme have necessarily included initial set up costs and engagement of technical consultants in the development of the programme. As the service has become more established these costs have been progressively diminishing.

IEP040 Overheads & Grants	End 2009	End 2010	2011 to 31.1.2011	Scheme to date	Per month over 25 months	Moving £120,000 EES staff costs to grants
Overheads spent	£142,750	£198,121	£10,500	£351,371	£14,055	£231,371
Overheads committed			£12,914	£12,914		
Overheads total	£142,750	£198,121	£23,414	£364,285	£14,571	£244,285
Grants spent	£536,714	£458,117	£21,640	**£1,016,471**	£40,659	£1,136,471
Grants committed		£203,705	£226,262	£226,262		
Grants total	£536,714	£661,822	£247,902	£1,242,733	£49,709	£1,362,733
Total	£679,464	£859,943	£271,316	**£1,607,018**	£64,281	£1,607,018
Overheads as % of spend	21%	23%		23%	23%	15%

2. Turnkey service delivery

Over 60% of EES staff time (or costs equivalent to approx. £60,000 annually) is currently spent on delivering the turnkey service to the Home Energy Scheme (arranging appointments with householders, communicating between contractors and householders, problem resolution etc). 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 could be considered as grant spend. In this case overheads come down to **15%** of total spend.

3.3 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.

IEP040.83001 Grants & Subsidies	End 2009	End 2010	2011 to 31.1.2011	Scheme to date
Home Energy Scheme				
Energy reports & Quality Assurance (QA)	£62,699	-£709		£61,990
QA Checks	£500	£2,430	£3,000	£5,930
Home Energy Package – all works	£441,264	£182,496	£8,972	£632,732
Home Energy Package - works on CRM				*£587,880*
Home Energy Package - works not yet on CRM				*£44,852*
Home Energy Checks – all works	£14,722	£10,652		£25,374
Home Energy Checks - works on CRM				*£23,709*
Home Energy Checks - works not yet on CRM				*£1,665*
Light bulb purchasing	£17,477	£29,045		£46,522
Total				**£727,691**
Heating System Improvement		£124,117	£9,668	**£133,785**
Community buildings programme		£101,076		**£101,076**
Other				
Problem resolution	£51	£481		£532
Electric heaters		£495		£495
Social security mailout		£6,434		£6,434
Aerial thermal imaging		£1,600		£1,600
TOTAL	**£536,713**	**£458,118**	**£21,640**	**£1,016,471**

3.4 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 **£1149.60** per property
- 88% of the cost spent on intervention measures (3664 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 (new boilers)
- Across **44** completed properties this equates to an average spend of **£3041** 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 (CRM) database to provide an effective tool for the administration, management and reporting of the different work programmes.

Section 4 presents the data currently captured by the CRM on the measures that have been installed by the EES as part of the Home Energy Scheme.

Final figures are only entered onto the CRM when the work and the quality assurance processes are complete. For the purposes of this report work in progress is not accounted for. Therefore there is a variance between the service spend on the budget reporting and that appearing on the CRM reports.

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

4.2 Loft insulation

- 325 lofts insulated (48% of properties)
- 20,619m2 of loft insulation quilt laid
- £299.969 spent on insulating lofts and associated works
- Average cost of £923 per property including loft clearance, floor board removal, fire protection, cold water tank insulation and bye-law compliance

Loft Insulation	Actual Amount	No. of properties	Av cost per property
EES 11 Cold water tank insulation jacket	£7,003	102	£69
EES01a Loft Clearance (hourly rate)	£31,526	232.00	£136
EES02a Remove and dispose existing insulation (per square metre)	£10,911	68	£160
EES02b Remove and dispose existing insulation (hourly rate)	£515	8	£64
EES03a Remove and replace nailed floor board	£23,977	118	£203
EES03b Remove and replace nailed floor board (hourly rate)	£323	6	£54
EES05 50mm thick loft insulation	£1,065	1	£1,065
EES06 100mm thick loft insulation	£29,248	83	£352
EES07 200mm thick loft insulation	£99,371	203	£490
EES08 300mm thick loft insulation	£69,198	103	£672
EES09 Intumescent bag/fire hood to downlighter	£2,713	23	£118
EES10 Cold water tank insulation quilt	£6,376	71	£90
EES12 Cold water tank lid	£7,423	86	£86
EES13a Cold water tank bye law kit (including associated products)	£9,084	26	£349
EES13b Cold water tank bye law kit (excluding associated products)	£1,235	13	£95
Total	**£299,969**	**325**	**£923**

4.2 Cavity Wall Insulation

- 106 properties cavity wall insulated (16% of properties)
- 9999m2 cavity wall insulation installed
- £94,614 spent on cavity wall insulation and associated works
- Average cost per property = £893

Cavity Wall Insulation	Actual Amount	No. of properties	Av cost per property
EES81 Insulation to 50mm cavity	£1,758	3	£586
EES15 Insulation to 65mm wide cavity wall	£65,103	92	£708
EES16 Insulation to 75mm wide cavity wall	£8,688	10	£869
EES17 Insulation to 90mm wide cavity wall	£3,998	4	£1,000
EES18a Cavity brush (per brush)	£324	5	£65
EES18b Cavity brush (per metre)	£120	3	£40
EES19 Airbrick	£727	14	£52
EES20 Core vent	£54	512	£0
EES21 Scaffold	£13,841	19	£728
Total	**£94,614**	**106**	**£893**

4.3 Draught proofing

- 165 properties have received draught proofing
- 1889m2 of draught proofing has been completed
- Average cost per property of draught proofing = £101

Draught proofing	Actual Amount	No. of properties	Av cost per property
EES22 Mastic pointing	£392	12	£33
EES25 Draught stripping to exterior door	£9,891	132	£75
EES26 Draught stripping to windows	£4,730	50	£95
EES27 Draught stripping to letterbox	£1,649	48	£34
Total	**£16,662**	**165**	**£101**

4.4 Hot water cylinders

- 42 properties have received hot water cylinder insulation jackets at an average cost per property of £95
- 62 properties have received new hot water cylinders at an average cost per property of £938

Hot water cylinders	Actual Amount	No. of properties	Av cost per property
EES 30 Hot water cylinder jacket (46x18 inch)	£3,017	32	£94
EES29 Hot water cylinder jacket (30x18 inch)	£545	5	£109
EES31 Hot water cylinder jacket (58x20 inch)	£435	5	£87
Total	**£3,997**	**42**	**£95**

Hot water cylinders	Actual Amount	No. of properties	Av cost per property
EES33 Replacement hot water cylinder (150l)	£32,774	38	£862
EES34 Replacement hot water cylinder (170l)	£16,805	18	£934
EES35 Replacement hot water cylinder (210l)	£8,548	6	£1,425
Total	**£58,126**	**62**	**£938**

4.5 Heating controls

- 147 properties received heating control improvements
- 40 properties have received room thermostats
- 112 properties have received thermostatic radiator valves
- 881 thermostatic radiator valves have been installed
- 27 properties have received heating / hot water programmer
- 34 properties have received water heating time clocks
- Average cost of heating controls per property = £364

Heating controls	Actual Amount	No. of properties	Av cost per property
EES36 Electrical room thermostat	£4,441	40	£111
EES38a Thermostatic radiator valve (per valve)	£41,319	112	£369
EES40 Hot water cylinder thermostat	£870	12	£73
EES42 Two channel programmable heating controller	£2,989	27	£111
EES44 Water heating time clock and boost	£3,900	34	£115
Total	**£53,520**	**147**	**£364**

4.6 Pipe lagging

- 167 properties have received pipe lagging
- Total of 2015m of pipe lagging has been installed
- Average per property cost of pipe lagging = £110

Pipe lagging	Actual Amount	No. of properties	Av cost per property
EES47 Pipework lagging 13mm thick to 22mm pipe	£3,430	61	£56
EES48 Pipework lagging 19mm thick to 22mm pipe	£8,442	112	£75
EES49 Pipework lagging 25mm thick to 22mm pipe	£6,448	69	£93
Total	**£18,320**	**167**	**£110**

4.7 Home Energy Checks *(For flats and houses built after 1996)*

- 190 properties have received Home Energy Checks
- Average cost per property of £125

Home Energy Checks	Actual Amount	No. of properties	Av cost per property
EES75 HEC to Flat or Bedsit	£19,354	160	£121
EES76 HEC to Bungalow	£500	4	£125
EES77 HEC to House	£3,735	25	£149
EES78 Home Energy Assessor hourly rate	£120	1	£120
Total	**£23,709**	**190**	**£125**

4.8 Other works

	Actual Amount	No. of properties	Av cost per property
EES67 Smoke detector installation	£1,054	133	£8
EES58 Low flow showerhead	£70	1	£70
EES64 Dual flush retrofit device	£450	5	£90
EES68 Minimum charge for lamps and detectors	£921	15	£61
EES69 Miscellaneous Charge	£23,692	289	£82

4.9 Low energy light bulbs

Low energy light bulbs	Actual Amount	No. of properties	Av cost per property
EES66 Low energy lamp replacement	£16,484	377	£44

In addition to the installation costs above, £46,522 has been spent on purchasing of light bulbs, at an average cost of £3 per light bulb this equates to approximately 15507 light bulbs. The total of installation and purchase costs is £63,006.

5. 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 as detailed in section 4 above are provided in this section.

Please refer to Appendix 1 for the benchmark data and assumptions lying behind these figures.

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

5.1 Energy, cost and carbon emissions savings per installed measure

	Annual savings			Lifetime savings			
	Energy saved, kWh/yr	Costs saved, £/yr	CO2 saved, kgCO2/yr	Lifetime of measure, yrs	Energy saved, kWh	Costs saved, £	CO2 saved, kgCO2
Loft insulation (0-270mm)	3946	£284	722	40	157838	£11,364	28884
Loft insulation (50-270mm)	1135	£82	208	40	45405	£3,269	8309
Loft insulation*	1489	£107	272	40	59560	£4,288	10899
Cavity Wall Insulation*	3012	£217	551	40	120480	£8,675	22048
Draught proofing*	631	£45	115	20	12620	£909	2309
Hot water cylinder jacket	919	£66	168	12	11027	£794	2018
Hot water cylinder replacement	919	£66	168	12	11027	£794	2018
Electrical room thermostat	1514	£109	277	12	18162	£1,308	3324
Hot water cylinder thermostat	595	£43	109	12	7135	£514	1306
All heating controls (properties)*	1457	£105	267	12	17484	£1,259	3200
Pipework lagging	324	£23	59	10	3243	£234	594
Boiler replacement	5946	£428	1088	10	59459	£4,281	10881
CFL (per light bulb)	28	£2	5	5	140	£10	26
Home Energy Check	557	£40	102	2	1114	£80	204
Other work (water efficiency, smoke detectors, misc works)	0	£0	0	0	0	£0	0

**Reference figures taken from CERT data. Other figures from EST. See Appendix 1 for further details.*

5.2 Annual energy, fuel cost and carbon dioxide savings for all measures installed

		Per measure, per year				Total for installed measures, per year				Payback
	No. of measures	Av cost per measure	Energy saved, kWh/yr	Costs saved, £/yr	CO2 saved, kgCO2/yr	Cost, £	Energy saved, kWh/yr	Costs saved, £/yr	CO2 saved, kgCO2/yr	
Home Energy Scheme										
Total loft insulation	325	£923	1489	£107	272	£299,969	483925	£34,843	88558	8.6
Cavity Wall Insulation	106	£893	3012	£217	551	£94,614	319272	£22,988	58427	4.1
Draught proofing	165	£101	631	£45	115	£16,662	104115	£7,496	19053	2.2
Hot water cylinder jacket	42	£95	919	£66	168	£3,997	38595	£2,779	7063	1.4
Replacement hot water cylinder	62	£938	919	£66	168	£58,126	56973	£4,102	10426	14.2
All heating controls (properties)	147	£364	1457	£105	267	£53,520	214179	£15,421	39195	3.5
Pipework lagging	167	£110	324	£23	59	£18,320	54162	£3,900	9912	4.7
Other work (water efficiency, smoke detectors, misc works)						£26,187				
Home Energy Check	190	£125	557	£40	102	£23,709	105830	£7,620	19367	3.1
Low energy light bulbs (units)	15507	£4	28	£2	5	£63,006	434196	£31,262	79458	2.0
Home Energy Scheme Total						**£658,111**	**1811247**	**£130,410**	**331458**	**5.0**
Heating system improvement	44	£3,041	5946	£428	1088	£133,785	261622	£18,837	47877	7.1
TOTAL						**£791,896**	**2,072,868**	**£149,247**	**379,335**	**5.3**

5.3 Lifetime energy, fuel cost and carbon dioxide savings for measures installed

		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									
Total loft insulation	325	£923	59560	£4,288	10899	£299,969	19357000	£1,393,704	3542331
Cavity Wall Insulation	106	£893	120480	£8,675	22048	£94,614	12770880	£919,503	2337071
Draught proofing	165	£101	12620	£909	2309	£16,662	2082300	£149,926	381061
Hot water cylinder jacket	42	£95	11027	£794	2018	£3,997	463135	£33,346	84754
Replacement hot water cylinder	62	£938	11028	£795	2019	£58,126	683738	£49,287	125175
All heating controls (properties)	147	£364	17484	£1,259	3200	£53,520	2570148	£185,051	470337
Pipework lagging	167	£110	3243	£234	594	£18,320	541622	£38,997	99117
Other work (water efficiency, smoke detectors, misc works)			0	£0	0	£26,187	0	£0	0
Home Energy Check	190	£125	1114	£80	204	£23,709	211660	£15,240	38734
Low energy light bulbs (installation & purchase)	15507	£4	140	£10	26	£63,006	2170980	£156,311	397289
Home Energy Scheme Total						**£658,111**	**40,851,462**	**£2,941,363**	**7,475,868**
Heating system improvement	44	£3,041	59459	£4,281	10881	£133,785	2616216	£188,368	478768
TOTAL						**£791,896**	**43,467,679**	**£3,129,730**	**7,954,636**

5.4 Key Facts

- £791,896 spent on energy efficiency improvement measures under the Home Energy Scheme and Heating System Improvement scheme
- These measures deliver total annual energy savings of **2,072,868 kWh**, fuel cost savings of **£149,247** and carbon dioxide savings of **379,335 kgCO2**
- This provides a payback is **5.3 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 **43,467,679 kWh**, fuel cost savings of **£3,129,730** and carbon dioxide savings of **7,954,636 kgCO2**

Average per property

- £658,111 spent on Home Energy Scheme measures over 672 domestic properties at an average cost of **£979 per property**
- Delivering average annual energy savings of **2,695 kWh**, cost savings of **£194** and carbon dioxide savings of **493 kgCO2** per property
- Over the lifetime of the measure total average energy savings of **60,791 kWh**, cost savings of **£4,377** and carbon dioxide savings of **11,125 kgCO2** per property

6. Scheme paybacks on investment

Using the estimated energy, cost and carbon savings calculated against the energy efficiency measures as detailed in section 5 it is possible to analyse the overall effectiveness of the Energy Efficiency Service in terms of payback on the funding invested.

6.1 Grant spend

IEP040.83001	Spend	Energy saved, kWh/yr	Costs saved, £/yr	CO2 saved, kgCO2/ yr	Payback	Notes
Home Energy Scheme						
Energy reports & QA	£61,990	0	£0	0	0.0	
QA Checks	£5,930	0	£0	0	0.0	
Home Energy Package (HEP) – all works	£632,732					
HEP - works on CRM	*£587,880*	1,705,417	£122,790	312,091	4.8	
HEP - works not yet on CRM	*£44,852*	0	£0	0	0.0	Savings not yet quantified
Home Energy Checks (HEC) – all works	£25,374					
HEC - works on CRM	*£23,709*	105,830	£7,620	19,367	3.1	
HEC - works not yet on CRM	*£1,665*	0	£0	0	0.0	Savings not yet quantified
Light bulb purchasing	£46,522	0	£0	0	0.0	Savings incorporated into HEP
Total	**£727,691**	**1,811,247**	**£130,410**	**331,458**	**5.6**	
Heating system improvement	**£133,785**	261,622	£18,837	47,877	7.1	
Community buildings programme	**£101,076**	0	£0	0	0.0	Savings not yet quantified
Other		0	£0	0	0.0	
Problem resolution	£532	0	£0	0	0.0	No attributable energy savings
Electric heaters	£495	0	£0	0	0.0	No attributable energy savings
Social security mailout	£6,434	0	£0	0	0.0	No attributable energy savings
Aerial thermal imaging	£1,600	0	£0	0	0.0	No attributable energy savings
TOTAL GRANT SPEND	**£1,016,471**	**2,072,868**	**£149,247**	**379,335**	**6.8**	

The current payback on the grant money spent on the Home Energy Scheme is 5.6 years and the Heating System Improvement scheme 7.1 years. The current estimated payback on the £1,016,471 invested in the EES grant budget is 6.8 years.

Note that work that is currently in progress under the Home Energy Scheme and the Community Buildings Programme is not accounted for in the CRM until the projects have been fully complete and signed off. Therefore the energy, cost and carbon dioxide savings resulting from this work is not accounted for in the above analysis.

6.2 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 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 improve.

In addition, we have not quantified 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.

6.3 Total EES spend

Looking at the Energy Efficiency Service spend as a whole the paybacks are significantly increased when the overhead costs are incorporated, giving a current payback of 9.2 years on the £1,367,842 spent.

IEP040	Spend	Energy saved, kWh/yr	Costs saved, £/yr	CO2 saved, kgCO2/yr	Payback	Notes
Overheads	£351,371	0	0	0	0	Overhead costs should reduce with time
Grants	£1,016,471	2072868	£149,247	379335	6.8	Savings from all interventions not yet calculated
EES SPEND TOTAL	**£1,367,842**	**2072868**	**£149,247**	**379335**	**9.2**	

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. Agreement has been reached to expand the eligibility criteria and endeavour to increase 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 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.

8. Appendix - Energy, cost and carbon dioxide saving assumptions

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 propert y	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	557	£19.3	165						

* Source: Energy Saving Trust, 2011, www.est.org.uk
** Source: EXPLANATORY MEMORANDUM TO THE ELECTRICTY 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', however this is average 3 bed property so have divided it by 3 for one bed flat, the typical property receiving the home energy check

8.2 Adaptations to the Jersey situation

Energy saving from efficiency measures, kWh / yr

Average temperatures in Jersey are warmer than the UK average, therefore it could be assumed that the average house needs to consume less energy to keep it warm. However, we believe that the average property in Jersey is likely to be slightly larger than the UK average. We therefore have taken the view that these opposing factors cancel one another out and have assumed that the kWh per year savings for efficiency measures in Jersey to be the same as the UK.

Energy mix 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.

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 (kgCO2kWh)	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 (kgCO2kWh)	0.1899	0.2493		0.2996	0.4308	0.4308

Source: EXPLANATORY MEMORANDUM TO THE ELECTRICTY 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.

Due to the energy mix in Jersey, we have chosen to use the fuel type specific figures for both the unit price and carbon emission factors proportional to their occurrence in the domestic market to calculate the average cost of energy per kWh and the average carbon dioxide emissions per kWh. The assumptions listed below the table have been applied.

Fuel	Gas	Oil	Coal (solid fuel)	Electricity	Combination	Average per unit kWh consumed in Jersey
% proportion heating*	12.5	36	2	44	5.5	
Average price (pence / kWh)**	10.5	4.45	6.35	8.12	7.36	7.02 p/kWh
Carbon dioxide factor (kgCO2kWh)***	0.234	0.265	0.291	0.092	0.22	0.183 kgCO2/kWh

*Figures taken as average of space heating and water heating percentages from Jersey Annual Social Survey 2006
**Average of the Super Economy 24 rates is used for gas pricing as this is available to mains and bottled gas customers who use gas for central heating, water heating or fires. Electricity price taken at 75% energy use at Ec7 or Comfort Heat tariff and 25% at standard rate. Combination rate taken as average of other 4 unit rates.
***Carbon emission factors taken from the JerseySAPv1 tool, except electricity which is the figure agreed by Carbon Trust.