

Payback time

We are often asked about the pay-back time of the energy saving improvements we've made and gadgets we've bought. Our standard answer has been that it's too difficult to calculate and, anyway, not a factor in our decision to do it. But we've finally given in to pressure and have attempted to come up with some figures.

The exercise has convinced us that it is well nigh impossible to give a meaningful answer. Even estimates of annual savings brought about by any particular change are very crude and can't be used to predict savings from similar investment by others:

- Future fossil fuel prices are unpredictable. The columns on the right of the electricity and gas tables below illustrate the effect of changing unit prices for energy.
- The order of doing things changes the rate of energy saving, e.g. we have insulated some of our walls and also moved radiators away from outside walls. If a radiator is moved from a well insulated wall, then the saving will be less than if it is moved from a wall through which there is more heat loss.
- The payback time of replacing a gadget, e.g. fridge, with a more energy efficient model, should be longer if you did not need to replace the item.

Electricity		<i>kWh/year</i>	<i>kg CO2/year</i>			Cost of 1 unit / kWh	Cost of 1 unit / kWh
<i>Electricity consumption – benchmark year Mar 2004 to Feb 2005</i>		4100	2173			0.16	0.25
Change	Date implemented	Annual reduction		Saving per year in £	Installation cost in £	Payback time in years	Payback time in years
PV installed	4-Mar-05	1260	667.8	201.6	5100	25.3	16.2
Towel rail off	29-Apr-05	1600	848	256	0	0.0	0.0
Standby reduced	1-Jul-05	200	106	32	0	0.0	0.0
CFL bulbs in kitchen	24-Mar-06	100	53	16	35	2.2	1.4
Washing at 30C	17-Jun-06	100	53	16	0	0.0	0.0
Hybrid cooker bought	10-Nov-06	200	106	32	300	9.4	6.0
Freezer Savaplug fitted	28-Dec-07	150	79.5	24	25	1.0	0.7
Eco kettle bought	26-Dec-08	170	90.1	27.2	28	1.0	0.7
1st Heat Recovery fan	20-Jul-09	-20	-10.6	-3.2			
2nd Heat Recovery fan	4-Jan-10	-20	-10.6	-3.2			
New fridge/freezer	14-Jun-10	410	217.3	65.6	400	6.1	3.9
<i>Total electricity consumption minus generated electricity in Mar 2010-Feb 2011</i>		4150	2200	664	5888		
				% reduction	Return on investment		
<i>Current Annual Electricity Usage (02/2011) *</i>		1160	615	72%	11.3%		
<i>Net Annual Electricity Usage (02/2011) **</i>		-48	-25	101%			
* This figure ignores the microgenerated electricity contribution							
** This figure includes the microgenerated electricity contribution							

Gas		<i>kWh/year</i>	<i>kg CO2/year</i>			Cost of 1 unit / kWh	Cost of 1 unit / kWh
Gas consumption – benchmark year Mar 2004 to Feb 2005		12170	2312			0.07	0.12
Change	Date implemented	Annual reduction		Saving per year in £	Installation cost in £	Payback time in years	Payback time in years
Main roof insulated	3-Mar-05	800	152	56	766	13.7	8.0
TRV on radiators	9-Jun-05	100	19	7	125	17.9	10.4
Cavity wall insulation	16-Jun-05	600	114	42	125	3.0	1.7
New room thermostat	9-Nov-06	1500	285	105	35	0.3	0.2
Better flat roof insulation	9-Aug-07	500	95	35	646	18.5	10.8
1st thermal blind	8-Nov-07	300	57	21	435	20.7	12.1
North wall improvements	24-Jan-08	300	57	21	530	25.2	14.7
Radiator foils fitted	18-Sep-08	100	19	7	20	2.9	1.7
New lined curtains	25-Sep-08	100	19	7	420	60.0	35.0
New boiler	16-Oct-08	900	171	63	1980	31.4	18.3
Solar water heating installed	23-Oct-08	1000	190	70	4995	71.4	41.6
2nd thermal blind	11-Dec-08	150	29	10.5	350	33.3	19.4
1st heat recovery fan	23-Jul-09	150	29	10.5	400	38.1	22.2
3rd & 4th thermal blinds	10-Dec-09	200	38	14	500	35.7	20.8
2nd HR fan fitted	21-Jan-10	150	29	10.5	350	33.3	19.4
Underfloor insulation	11-Feb-10	500	95	35	1700	48.6	28.3
Radiators moved to inner walls	11-Mar-10	100	19	7	550	78.6	45.8
Spacetherm installed	6-May-10	600	114	42	1500	35.7	20.8
5th thermal blind	8-Jul-10	100	19	7	250	35.7	20.8
Total reduction in gas consumption		8150	1548.5	571	15677		
				% reduction	Return on investment		
<i>Total gas consumption Mar 2010-Feb 2011</i>		4020	764	67%	3.6%		

<http://www.greenlives.org.uk/payback.html>