

# appendix

## research data

research data in kilowatt hours per week  
year: 2007 to 2008

Proven = Proven 2.5 kilowatt wind turbine

FuturE = FuturEnergy 1 kilowatt wind turbine

solar T = solar panels with tracking

solarF = fixed solar panels

Week	Proven	FuturE	FuturE x4	Solar T	Solar F	Solar F x30%	total Solar	total out	total in
28-Dec									
04-Jan	57	14	56	2	2	2.6	4	29	61
11-Jan	57	14	56	4	3	3.9	7	27	64
18-Jan	57	23	92	2	2	2.6	4	24	61
25-Jan	74	20	80	3	2	2.6	5	27	79
01-Feb	63	8	32	8	6	7.8	14	29	77
08-Feb	59	16	64	9	8	10.4	17	35	76
15-Feb	2	0	0	9	7	9.1	16	23	18
22-Feb	39	7	28	8	6	7.8	14	23	53
29-Feb	88	16	64	9	6	7.8	15	30	103
08-Mar	68	8	32	12	8	10.4	20	38	88
14-Mar	64	6	24	12	8	10.4	20	46	84
21-Mar	79	10	40	5	4	5.2	9	43	88
28-Mar	43	10	40	12	8	10.4	20	43	63
04-Apr	48	7	28	14	9	11.7	23	28	71
11-Apr	28	4	16	14	10	13	24	31	52
18-Apr	40	9	36	14	9	11.7	23	30	63
25-Apr	30	7	28	11	7	9.1	18	25	48
02-May	32	8	32	18	10	13	28	26	60
09-May	20	4	16	25	13	16.9	38	35	58
16-May	6	2	8	16	10	13	26	30	32

<b>Week</b>	<b>Proven</b>	<b>FuturE</b>	<b>FuturE x4</b>	<b>Solar T</b>	<b>Solar F</b>	<b>Solar F x30%</b>	<b>total Solar</b>	<b>total out</b>	<b>total in</b>
23-May	15	7	28	21	12	15.6	33	28	48
30-May	56	15	60	10	6	7.8	16	30	72
06-Jun	0	0	0	9	6	7.8	15	25	15
13-Jun	11	2	8	18	12	15.6	30	38	41
20-Jun	31	9	36	18	12	15.6	30	25	61
27-Jun	47	16	64	20	11	14.3	31	45	78
04-Jul	7	4	16	21	13	16.9	34	40	41
11-Jul	28	6	24	14	9	11.7	23	34	51
18-Jul	10	1	4	13	9	11.7	22	27	32
25-Jul	22	2	8	27	12	15.6	39	28	61
01-Aug	17	5	20	16	10	13	26	30	43

## **payback time data**

See below pages 173-175

Wind power payback data Proven 2.5kW turbine with grid tie total cost: £14,000  
 Proven require all their turbines to be installed by their registered installers.

Year	Turbine	inflation rate (3%)	ROC payment for electricity (Lx) produced by Turbine	original cost	bank	interest	balance plus interest	balance after LX paid for	interest rate (2%)	LX cost per kWh in (£)	ROCS payment per kWh	kWh/yr	yearly cost of LX from supplier
1	14000.00	0.03	407.60	13245.94	14000.00	280.00	14280.00	13933.54	0.02	0.17	0.20	2038.00	346.46
2	13245.94	0.03	407.60	12481.49	13933.54	278.67	14212.21	13855.36	0.02	0.18	0.20	2038.00	356.85
3	12481.49	0.03	407.60	11706.33	13855.36	277.11	14132.46	13764.90	0.02	0.18	0.20	2038.00	367.56
4	11706.33	0.03	407.60	10920.14	13764.90	275.30	14040.20	13661.62	0.02	0.19	0.20	2038.00	378.59
5	10920.14	0.03	407.60	10122.60	13661.62	273.23	13934.85	13544.91	0.02	0.19	0.20	2038.00	389.94
6	10122.60	0.03	407.60	9313.35	13544.91	270.90	13815.80	13414.16	0.02	0.20	0.20	2038.00	401.64
7	9313.35	0.03	407.60	8492.06	13414.16	268.28	13682.44	13268.75	0.02	0.20	0.20	2038.00	413.69
8	8492.06	0.03	407.60	7658.36	13268.75	265.38	13534.13	13108.03	0.02	0.21	0.20	2038.00	426.10
9	7658.36	0.03	407.60	6811.88	13108.03	262.16	13370.19	12931.30	0.02	0.22	0.20	2038.00	438.89
10	6811.88	0.03	407.60	5952.22	12931.30	258.63	13189.93	12737.88	0.02	0.22	0.20	2038.00	452.05
11	5952.22	0.03	407.60	5079.01	12737.88	254.76	12992.63	12527.02	0.02	0.23	0.20	2038.00	465.61
12	5079.01	0.03	407.60	4191.83	12527.02	250.54	12777.56	12297.98	0.02	0.24	0.20	2038.00	479.58
13	4191.83	0.03	407.60	3290.26	12297.98	245.96	12543.94	12049.97	0.02	0.24	0.20	2038.00	493.97
14	3290.26	0.03	407.60	2373.87	12049.97	241.00	12290.97	11782.18	0.02	0.25	0.20	2038.00	508.79
15	2373.87	0.03	407.60	1442.22	11782.18	235.64	12017.82	11493.77	0.02	0.26	0.20	2038.00	524.05
16	1442.22	0.03	407.60	494.85	11493.77	229.88	11723.65	11183.87	0.02	0.26	0.20	2038.00	539.77
17	494.85	0.03	407.60	-468.72	11183.87	223.68	11407.55	10851.59	0.02	0.27	0.20	2038.00	555.97
18	-468.72	0.03	407.60	-1448.97	10851.59	217.03	11068.62	10495.97	0.02	0.28	0.20	2038.00	572.65
19	-1448.97	0.03	407.60	-2446.39	10495.97	209.92	10705.89	10116.07	0.02	0.29	0.20	2038.00	589.82
20	-2446.39	0.03	407.60	-3461.51	10116.07	202.32	10318.39	9710.87	0.02	0.30	0.20	2038.00	607.52
21	-3461.51	0.03	407.60	-4494.86	9710.87	194.22	9905.08	9279.34	0.02	0.31	0.20	2038.00	625.75
22	-4494.86	0.03	407.60	-5546.97	9279.34	185.59	9464.93	8820.41	0.02	0.32	0.20	2038.00	644.52
23	-5546.97	0.03	407.60	-6618.43	8820.41	176.41	8996.82	8332.96	0.02	0.33	0.20	2038.00	663.85

Wind turbine payback time data  
 Installed by owner except grid tie connection

Future Energy Turbine cost: £2,500

Year	Turbine	inflation rate (3%)	ROC payment for electricity (LX) produced by Turbine	original cost less ROC and cost of LX avoided	bank	interest	balance plus interest	balance after LX paid for	interest rate (2%)	LX cost per kWh in (£)	ROCS payment per kWh	kWh/yr	yearly cost of LX from supplier
1	2500.00	0.03	89.00	2335.35	2500.00	50.00	2550.00	2474.35	0.02	0.17	0.20	445.00	75.65
2	2335.35	0.03	89.00	2168.43	2474.35	49.49	2523.84	2445.92	0.02	0.18	0.20	445.00	77.92
3	2168.43	0.03	89.00	1999.17	2445.92	48.92	2494.84	2414.58	0.02	0.18	0.20	445.00	80.26
4	1999.17	0.03	89.00	1827.51	2414.58	48.29	2462.87	2380.21	0.02	0.19	0.20	445.00	82.66
5	1827.51	0.03	89.00	1653.36	2380.21	47.60	2427.81	2342.66	0.02	0.19	0.20	445.00	85.14
6	1653.36	0.03	89.00	1476.66	2342.66	46.85	2389.52	2301.82	0.02	0.20	0.20	445.00	87.70
7	1476.66	0.03	89.00	1297.33	2301.82	46.04	2347.86	2257.53	0.02	0.20	0.20	445.00	90.33
8	1297.33	0.03	89.00	1115.29	2257.53	45.15	2302.68	2209.64	0.02	0.21	0.20	445.00	93.04
9	1115.29	0.03	89.00	930.46	2209.64	44.19	2253.83	2158.00	0.02	0.22	0.20	445.00	95.83
10	930.46	0.03	89.00	742.76	2158.00	43.16	2201.16	2102.45	0.02	0.22	0.20	445.00	98.71
11	742.76	0.03	89.00	552.09	2102.45	42.05	2144.50	2042.83	0.02	0.23	0.20	445.00	101.67
12	552.09	0.03	89.00	358.37	2042.83	40.86	2083.69	1978.97	0.02	0.24	0.20	445.00	104.72
13	358.37	0.03	89.00	161.51	1978.97	39.58	2018.55	1910.69	0.02	0.24	0.20	445.00	107.86
14	161.51	0.03	89.00	-38.58	1910.69	38.21	1948.91	1837.81	0.02	0.25	0.20	445.00	111.09
15	-38.58	0.03	89.00	-242.01	1837.81	36.76	1874.57	1760.14	0.02	0.26	0.20	445.00	114.43
16	-242.01	0.03	89.00	-448.87	1760.14	35.20	1795.34	1677.48	0.02	0.26	0.20	445.00	117.86
17	-448.87	0.03	89.00	-659.26	1677.48	33.55	1711.03	1589.64	0.02	0.27	0.20	445.00	121.40
18	-659.26	0.03	89.00	-873.30	1589.64	31.79	1621.43	1496.39	0.02	0.28	0.20	445.00	125.04
19	-873.30	0.03	89.00	-1091.09	1496.39	29.93	1526.32	1397.53	0.02	0.29	0.20	445.00	128.79
20	-1091.09	0.03	89.00	-1312.74	1397.53	27.95	1425.48	1292.83	0.02	0.30	0.20	445.00	132.65
21	-1312.74	0.03	89.00	-1538.38	1292.83	25.86	1318.69	1182.05	0.02	0.31	0.20	445.00	136.63
22	-1538.38	0.03	89.00	-1768.11	1182.05	23.64	1205.69	1064.96	0.02	0.32	0.20	445.00	140.73
23	-1768.11	0.03	89.00	-2002.06	1064.96	21.30	1086.26	941.31	0.02	0.33	0.20	445.00	144.95

Solar panels payback time data 4 panels @ 200w each gives 850 kwh / year (from direct research)  
 Costs based on 4 x 200W panels total cost 2000 plus small grid connect and wiring Total cost £3500

Year	Turbine	inflation rate (3%)	ROC payment for electricity (LX) produced by Turbine	original cost less ROC and cost of LX avoided	bank	interest	balance plus interest	balance after LX paid for	interest rate (2%)	LX cost per kWh in (£)	ROCS payment per kWh	kWh/yr	yearly cost of LX from supplier
1	3500	0.03	170	3185.5	3500	70	3570	3425.5	0.02	0.17	0.2	850	144.5
2	3185.5	0.03	170	2866.665	3425.5	68.51	3494.01	3345.175	0.02	0.1751	0.2	850	148.835
3	2866.665	0.03	170	2543.36495	3345.175	66.9035	3412.079	3258.778	0.02	0.180353	0.2	850	153.30005
4	2543.365	0.03	170	2215.465899	3258.778	65.17557	3323.954	3166.055	0.02	0.185764	0.2	850	157.899052
5	2215.466	0.03	170	1882.829875	3166.055	63.3211	3229.376	3066.74	0.02	0.191336	0.2	850	162.636023
6	1882.83	0.03	170	1545.314772	3066.74	61.3348	3128.075	2960.56	0.02	0.197077	0.2	850	167.515104
7	1545.315	0.03	170	1202.774215	2960.56	59.21119	3019.771	2847.23	0.02	0.202989	0.2	850	172.940557
8	1202.774	0.03	170	855.0574413	2847.23	56.94461	2904.175	2726.458	0.02	0.209079	0.2	850	177.716774
9	855.0574	0.03	170	502.0091646	2726.458	54.52916	2780.987	2597.939	0.02	0.215351	0.2	850	183.048277
10	502.0092	0.03	170	143.4694395	2597.939	51.95878	2649.898	2461.358	0.02	0.221811	0.2	850	188.539725
11	143.4694	0.03	170	-220.726477	2461.358	49.22716	2510.585	2316.389	0.02	0.228466	0.2	850	194.195917
12	-220.726	0.03	170	-590.748272	2316.389	46.32779	2362.717	2162.695	0.02	0.23532	0.2	850	200.021794
13	-590.748	0.03	170	-966.77072	2162.695	43.25391	2205.949	1999.927	0.02	0.242379	0.2	850	206.022448
14	-966.771	0.03	170	-1348.97384	1999.927	39.99854	2039.925	1827.722	0.02	0.249651	0.2	850	212.203122
15	-1348.97	0.03	170	-1737.54306	1827.722	36.55445	1864.277	1645.708	0.02	0.25714	0.2	850	218.569215
16	-1737.54	0.03	170	-2132.66935	1645.708	32.91415	1678.622	1453.495	0.02	0.264854	0.2	850	225.126292
17	-2132.67	0.03	170	-2534.54943	1453.495	29.06991	1482.565	1250.685	0.02	0.2728	0.2	850	231.88008
18	-2534.55	0.03	170	-2943.38591	1250.685	25.0137	1275.699	1036.862	0.02	0.280984	0.2	850	238.836483
19	-2943.39	0.03	170	-3359.38749	1036.862	20.73725	1057.6	811.5981	0.02	0.289414	0.2	850	246.001577
20	-3359.39	0.03	170	-3782.76911	811.5981	16.23196	811.5981	558.2165	0.02	0.298096	0.2	850	253.381625