

Performance information and predictions

Guidance for members

The REAL Assurance Scheme Consumer Code stresses that members **must not 'oversell'** energy-generating equipment to consumers.

Before a sale is agreed, Members **must**:

- provide customers with certain technical assurances;
- provide a credible estimate of performance, in line with MCS standards;
- present the performance estimate **in writing** to consumers in a meaningful way.

This guidance sets out:

- A. the REAL Assurance Scheme Consumer Code's requirements of all its members; and
 - B. technology-specific guidance, incorporating:
 - the MCS standards for calculations, and
 - REAL's suggested presentation of the resulting performance information.
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A. The REAL Assurance Scheme Consumer Code

The REAL Assurance Scheme Consumer Code requires members to provide **written** estimates of predicted performance **before** the sale, i.e. before the signing of any contract and/or the payment of a deposit. In the case of a sales visit where a contract is signed in a consumer's home, the information must be provided **in writing during the visit**.

Code requirements

1. Calculations of performance

1.1 Written performance estimates **must**:

- be based on calculations using recognised international standards as set out in the Microgeneration Certification Scheme (MCS) and on product information confirmed by an independent test laboratory;
- be based on specific performance data for the technology in question wherever this is available;
- include the relevant MCS disclaimer on reliability of estimates of performance (see below);
- provide equipment ratings in kilowatts (kW) and output in kilowatt hours (kWh), although other units, for example btus or therms, may also be used, if appropriate;

- include SAP calculations, where these are required under MCS, alongside any alternative calculation;
- be provided in a format that is readily understandable by consumers; and
- provide comparisons for non-expert readers.

1.2 Where output is in any way variable, for example, due to climatic effects or fuel variations, Members should, unless the technology-specific standard says otherwise:

- clearly say whether the estimates are based on average or 'worst case' information;
- not base figures on data for any particular time of year, but on yearly data or, where applicable, on weather data collected over at least a minimum of 10 years;
- state the source of the information on which their calculations are based;
- name the area, and where relevant the altitude, where the information was measured;
- describe the relationship between the rated output (in kilowatts) and the predicted average output (in kilowatt hours each year);
- take account of predicted variations from the calculated output, for example, to allow for shade from buildings, aspect, distance from the measurement location, variations in fuel moisture and quality, and any other factors that apply); and
- follow the technology-specific guidelines attached.

[REAL intends to construct a database of approved information sources for members.]

2. Presentation of performance estimate

2.1 Members **must** present performance information:

- in a format that is readily understandable by consumers; **and**
- with comparisons for non-expert readers.

2.2 Members **must** identify if the estimate:

- is specific to the property and, if it is, state whether this estimate follows a site survey; **or**
- is based on some standard or 'average' premises and the details and source of that standard (see some examples below)

Examples of 'average' figures

'The average annual use of electricity is 3,300kWh' (Source: Ofgem)

'The average annual use of gas is 20,500kWh' (Source: Ofgem)

'Heating water for use in taps, baths and showers makes up around 30% of an average household's gas bills. Your total energy bills may well cost more if you use an electric immersion heater.' (Source: Energy Savings Trust)

2.3 Members may:

- include estimates of savings, periods of recovery ('payback'), income (and prospective export earnings) or other measures of financial effectiveness, but only where these are based on information from the consumer on his or her actual existing energy use and cost; **and/or**
- include illustrative case studies, but these must detail the size and type of the system supplied, the type of property which it was used for, and the energy costs.

In either case, members may make assumptions about, for example, future energy costs, inflation rates, and long-term performance of the system, but **only if these assumptions are made clear**.

2.3.1 When calculating the value of the Feed-in Tariff for consumers (or in the future the proposed Renewable Heat Incentive), members should use a model based on a reasonable set of assumptions which they must disclose to the consumer. Where possible the Energy Saving Trust model should be used. It can be found at: www.energysavingtrust.org.uk/Generate-your-own-energy/Cashback-Calculator

2.4 Members may, where the MCS standard allows, use alternative calculation methods but, if they do, they **must**:

- present it with a justification and, where required to use SAP¹, with the SAP calculation alongside; **and**
- not give the alternative undue prominence; **and**
- provide a warning to treat it with caution if it is significantly greater than results from the MCS standard methodology.

To avoid the danger of over-selling, members are advised to err on the side of caution in any such estimates.

3. Record-keeping

Members **must**:

- keep a record of all performance calculations on which predictions have been made for 10 years after the equipment has been installed; **and**
- be able to justify the calculations; **and**
- make calculations available to the scheme administrator nominated appointee if asked.

¹ Standard Assessment Procedure for Energy Rating
<http://standardassessmentprocedure.com/>

Guidance by technology

Solar Photovoltaic

Members **must** comply with the relevant Microgeneration Installation Standard. Currently this is [MIS 3002]

Suggested Presentation

Your PV system

“The performance of solar PV systems is impossible to predict with certainty due to the variability in the amount of solar radiation (sunlight) from location to location and from year to year. This estimate is based upon the Government's standard assessment procedure for energy rating of buildings (SAP) and is given as guidance only. It should not be considered as a guarantee of performance.”

A typical ‘x’ kWp PV system generates ‘y’ kWh.

Your system is predicted to produce ‘z’ kWh.

This estimate has been produced using the SAP methodology. To produce this estimate, we have assumed

[Members should explain any ‘correction’ factor here - eg shading/roof orientation/UK location/polycrystalline or monocrystalline - and how this might affect output.]

[Members may present an additional non-SAP estimate here, provided it complies with REAL guidance overleaf]

You can get the best out of your system by *[insert advice here]*

We estimate that your electricity requirement is [Abc kWh] per year. This estimate is based on the size of your property, the number of occupants, your likely hot water use, your need for heating and your other fuel sources.

Based on your current usage, we estimate that your PV system will produce around ‘z’% of your current electricity use. This is enough electricity for xx showers plus yy washloads per week for the average family.

[typical electricity consumption of energy efficient appliances:

washing machine

1 to 1.5 kWh per wash – source EST private communication

220kWh per year – source Defra

electric shower

9.1kw electric shower around 0.9 kWh per shower or 530 kWh per year

Source: derived from Energy Saving Trust, private communication with REAL]

Feed-In tariffs

Your system qualifies for payments under the Feed-In tariff scheme. Under this scheme, you will receive generation payments from your electricity supplier for the electricity you generate PLUS a further 'export' payment for any electricity you feed back into the grid. And if you use the electricity you generate, you are also saving on your electricity bill. You can read more about this in REAL's consumer guide to Feed-In tariffs at [*URL to come*]

We have used the Energy Saving Trust cashback calculator to work out what this means for you. We have assumed that you will export xx% [insert as applicable eg 50% if out most of the day] to the national grid.

You will:

A. Earn 41.3p / 36.1p [delete as applicable] per kWh x 'z' = [generation income]

B. Earn 0.03p per kWh x [50%] 'z' = [export income] and

C. Save 0.13p per kWh x [50%] z = demand saved

Your total benefit per year = A + B + C

The Energy Saving Trust calculator can be found at: www.energysavingtrust.org.uk/Generate-your-own-energy/Cashback-Calculator

Guidance on alternative estimates

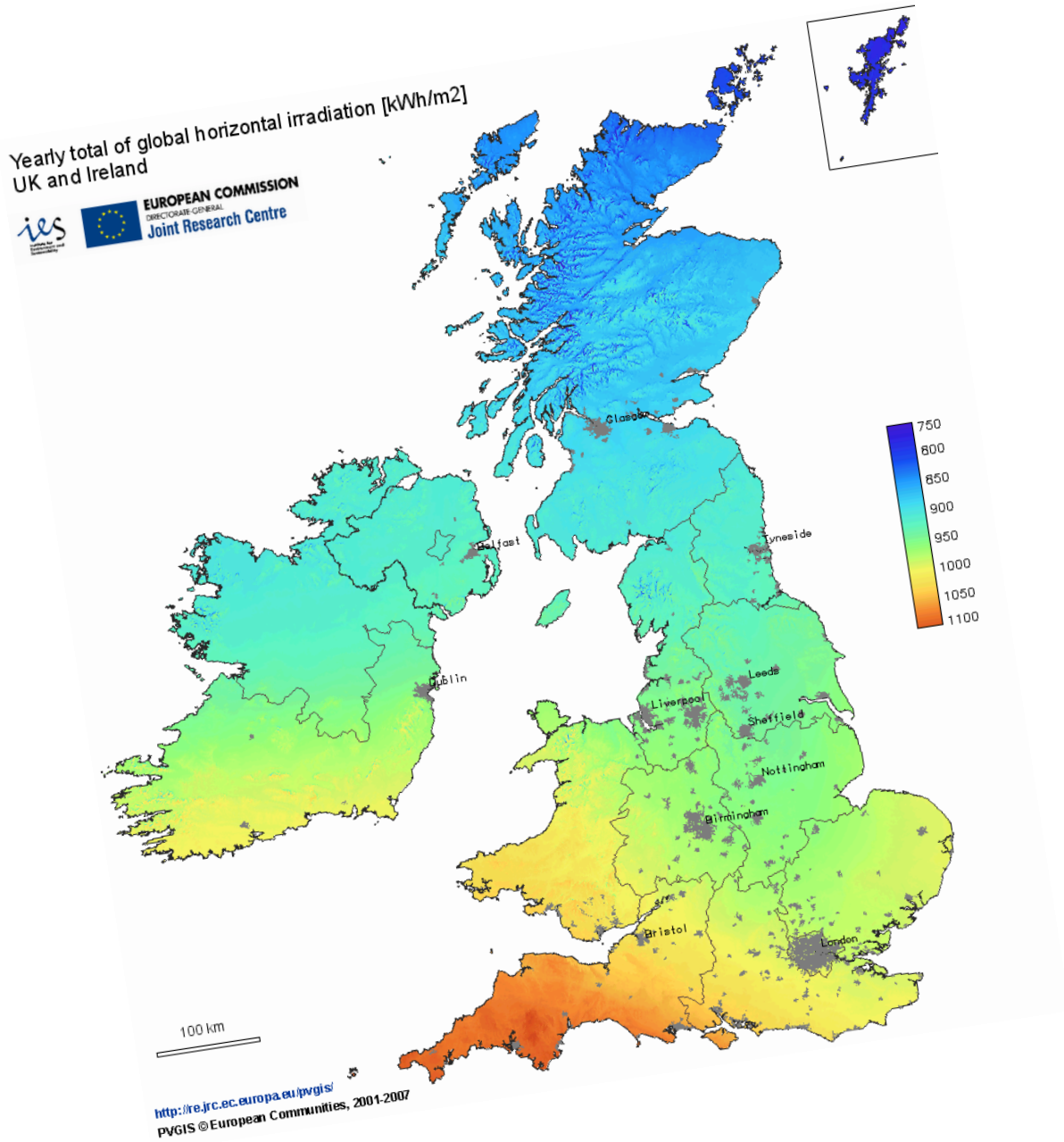
If a member also presents an alternative estimate calculated by using a different methodology and/or assumptions, then the member must:

1. ensure any figures calculated are in line with the attached EU Joint Research Centre maps (source: EU Joint Research Centre's PV-GIS http://re.jrc.ec.europa.eu/pvgis/countries/europe/g13y_uk_ie.png) and the table estimating the effect of varying incline and orientation on a typical UK site (source: REA) or with other models that convert for tilt and azimuth
2. specify and justify the methodology/assumptions and factors used
3. explain any difference between the results using SAP and the alternative methodology
4. give **at least equal prominence** to the SAP estimate
5. Include the following warning, if this estimate is significantly greater than the result given by the standard method:

'This estimate has been produced using a methodology/assumptions that differ from the Government's standard assessment procedure for energy rating of buildings. You should consider both estimates together.'

Yearly total of global horizontal irradiation [kWh/m²]

Source: European Commission Joint Research Centre



Effect of Varying Inclination and Orientation on a Typical UK Site

Inclination	Orientation				
	South	SE/SW	E/W	NE/NW	North
0 (<i>Horizontal</i>)	742	742	742	742	742
10	796	778	735	690	671
20	832	800	721	633	599
30	852	809	701	576	525
40	854	802	674	521	447
50	838	781	638	468	373
60	805	744	593	414	308
70	755	693	539	360	255
80	688	629	478	305	209
90 (<i>Vertical</i>)	604	552	413	253	168

- Typical UK Site at 855kWh/ kWp
- AC Output in kWh/ kWp

Source: REA

Solar Hot Water Heating

Members **must** comply with the relevant Microgeneration Installation Standard. Currently this is MIS: 3001.

Suggested Presentation

Your solar hot water system

“The performance of solar heating systems is impossible to predict with certainty due to the variability in the amount of solar radiation (sunlight) from location to location and from year to year. This estimate is based upon the Government's standard assessment procedure for energy rating of buildings (SAP) and is given as guidance only. It should not be considered as a guarantee of performance.”

Each typical panel generates ‘x’ kWh.

Your system of ‘y’ panels is predicted to produce ‘z’kWh.

This estimate has been produced using the SAP methodology. To produce this estimate, we have assumed [*Members should explain any ‘correction’ factor here eg shading/roof orientation/UK location/type of panel and how this might affect output*].

[Members may present an additional non-SAP estimate here, provided it complies with REAL Assurance Scheme guidance below]

The Energy Saving Trust (EST) estimates that one 3.5msq. panel on a 3-bed semi-detached home, will produce around one-third of that home’s hot water needs. How much this saves you depends on the energy source you are already using for heating water.

Based on your current usage, we estimate that your system will heat around ‘z’% of your domestic hot water over the year. In winter, this may be as low as ‘x’%, in summer as high as ‘y’%.

You can get the best out of your system by [*insert advice on eg best time to bathe*].

REAL Guidance on Alternative Estimates

If a member also presents an alternative estimate calculated by using a different methodology and/or assumptions, then the member must:

1. specify and justify the methodology/assumptions and factors used
2. explain any difference between the results using SAP and the alternative methodology
3. ensure any figures calculated are in line with the attached output map and the table estimating the effect of varying incline and orientation on a typical UK site
4. give **at least equal prominence** to the SAP estimate
5. include the following warning, if this estimate is significantly greater than the result given by the standard method:

‘This estimate has been produced using a methodology/assumptions that differ from the Government's standard assessment procedure for energy rating of buildings. You should consider both estimates together.’

Heat Pumps

Members should not install heat pumps in properties that are not adequately energy efficient.

Members **must** comply with the relevant Microgeneration Installation Standard. Currently, this is MIS 3005.

Suggested Presentation

Your heat pump

'The performance of Microgeneration heat pump systems is impossible to predict with certainty due to the variability of the climate and its subsequent effect on both heat supply and demand. This estimate is based upon the best available information but is given as guidance only and should not be considered as a guarantee.'

Your total energy usage is expected to be 'zz' kWh. We estimate that your home requires 'x' kWh per annum to heat your living space ('space heating') and 'y' kWh to heat your hot water. To calculate this, we have used *[cite and briefly explain source here: eg SAP report/typical figures for similar properties from other source]* and we have assumed *[explain briefly]*

Your heat pump is expected to provide b% of your space heating needs and c% of your hot water. *[Members should also present some information to consumers on the **seasonal performance** of Heat Pump.]*

You will need an additional heating source to heat z% of your domestic hot water.

[Members may also present an additional alternative estimate calculated by using a different methodology and/or CoP here, provided it complies with REAL guidance below.]

You can get the best out of your system by *[insert advice on consumer behaviour here]*.

REAL Guidance on Alternative Estimates

If a member also presents an alternative estimate calculated by using a different methodology and/or CoP, then the member must:

1. specify and justify the methodology/CoP used;
2. explain any difference between the results using the alternative method methodology/CoP and the MCS-described method/SAP CoP;
3. provide seasonal performance information;
4. give **at least equal prominence** to the estimate based on the MCS-described method /SAP CoP and the seasonal performance information;
5. include the following warning, if the alternative estimate is significantly greater than the result given by the standard method:

'This estimate has been produced using a methodology/CoP that differs from the Government's standard method. You should consider both estimates together.'

Solid Fuel Heating Systems

Members **must** comply with the relevant Microgeneration Installation Standard. Currently this is MIS: 3004.

Suggested Presentation

Your solid fuel system

'The performance of Microgeneration Solid Biofuel Heating Systems is impossible to predict with certainty due to the variability of the climate and its subsequent effect on both heat supply and demand. This estimate is based upon the best available information but is given as guidance only and should not be considered as a guarantee.'

We estimate that your home requires 'x' kWh per annum for space heating and hot water. To calculate this, we have used [cite and briefly explain source here: eg SAP report/historical energy use] and we have assumed [explain briefly].

[Members may also present an additional alternative estimate using design heat loss or building heat load methodology not specifically mentioned in the MCS standard, provided it complies with REAL guidance overleaf]

Your solid fuel heating system is expected to provide y% of this. This is based on you using 'z' kgs/cubic metres of [specify fuel] per year, producing 'b' kWh per kg.

You can get the best out of your system by [insert advice on consumer behaviour here].

The Energy Saving Trust has estimated the savings from solid fuel heating systems in a typical detached property. Its estimates in monetary terms can be found at:

<http://www.energysavingtrust.org.uk/Generate-your-own-energy/Wood-fuelled-heating>

REAL Guidance on Alternative Estimates

If a member also presents an alternative estimate calculated using design heat loss or building heat load methodology not specifically mentioned in the MCS standard, then the member must:

1. specify and justify the methodology used;
2. explain any difference between the results using the alternative methodology and the methodologies specifically mentioned in the MCS standard;
3. give **at least equal prominence** to the estimate based on the methods mentioned in the MCS standard;
4. include the following warning, if the alternative estimate is significantly greater than the result given by the standard method:

'This estimate has been produced using a methodology that we regard as suitable. You should consider both estimates together.'

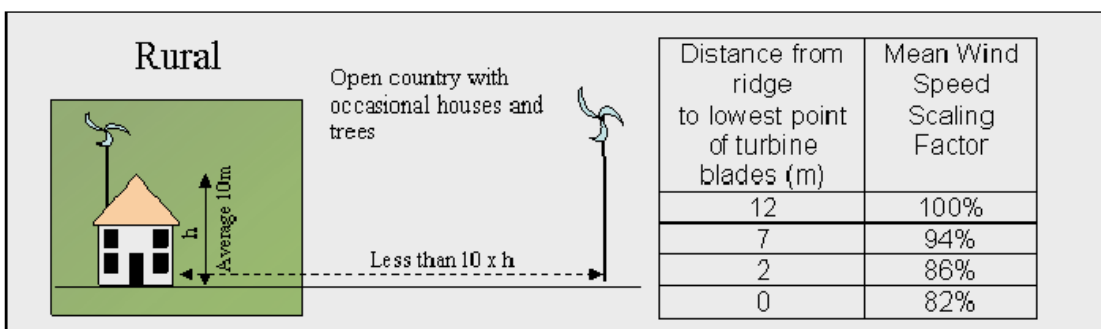
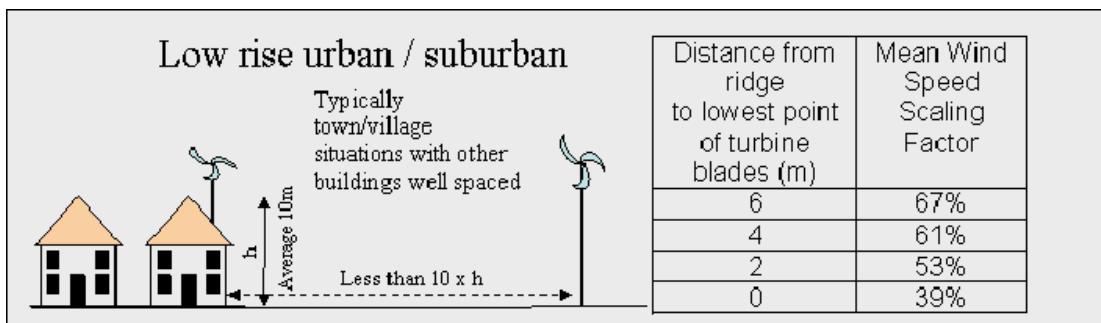
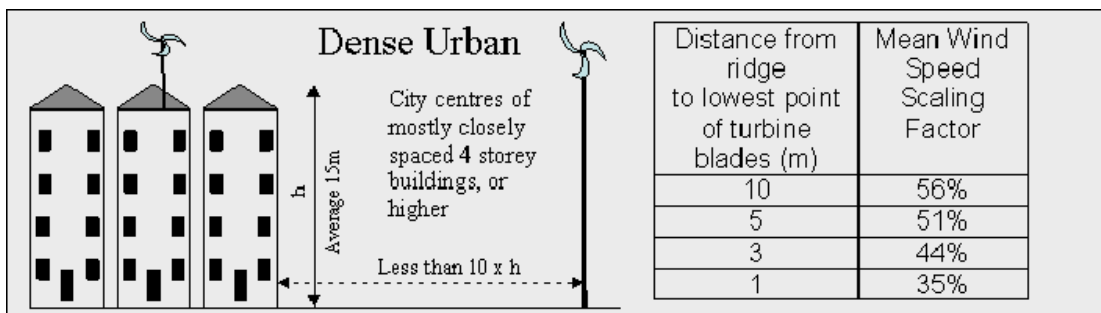
Micro Wind Turbines

Members **must** comply with Microgeneration Installation Standard. Currently this is MIS 3003.

Members **must** make clear that:

- output from building-mounted turbines in urban or suburban settings will be very limited;
- *any* turbine's output may be significantly affected by any new developments (buildings or trees).

Members may wish to include the following to explain correction factors for mean wind speed for turbines mounted on or near buildings



Suggested Presentation

“The performance of wind turbine systems is impossible to predict with any certainty due to the variability in the wind from location to location and from year to year. This estimate is based upon the best available information but is given as guidance only and should not be considered as a guarantee. For a greater level of certainty, it is recommended that on-site wind speed monitoring is undertaken for at least a year.”

A typical ‘x’kW [building-mounted/pole-mounted – *delete as applicable*] wind turbine generates ‘y’ kWh a year based on average wind-speed of ‘z’ m/s. [cite source eg. *The Energy Saving Trust tests show that a building-mounted small (1-2kW) turbine produces a maximum of 200kWh a year in urban and suburban settings, and close to 1000kWh in rural sites in Scotland.*]

Your system is predicted to produce ‘b’ kWh.

This estimate has been produced using information on wind-speeds [from monitoring at the site/from the NOABL database – *delete as applicable*] and corrected for [explain any ‘correction’ factor here eg *obstructions/tower height and how this might affect output*].

You can estimate the wind-speed in your location with the Energy Saving Trust ‘domestic wind speed prediction tool’:

<http://www.energysavingtrust.org.uk/Generate-your-own-energy/Can-I-generate-electricity-from-the-wind-at-my-home>

[Members may also present an additional alternative estimate using a different methodology or using additional adjustment factors in the standard methodology, provided it complies with REAL guidance overleaf]

We estimate that your electricity requirement is [Abc kWh] per year. This estimate is based on the size of your property, the number of occupants, your likely hot water use, your need for heating and your other fuel sources.

Based on your current usage, we estimate that your wind turbine will produce around ‘z’% of your current electricity use. This is enough electricity for xx showers plus yy washloads per week for the average family.

[typical electricity consumption of energy efficient appliances:

washing machine

1 to 1.5 kWh per wash – source EST private communication

220kWh per year – source Defra

electric shower

9.1kw electric shower around 0.9 kWh per shower or 530 kWh per year

Source: derived from Energy Saving Trust, private communication with REAL]

You can get the best out of your system by [*insert advice here*]

Feed-In tariffs

Your system qualifies for payments under the Feed-In tariff scheme. Under this scheme, you will receive generation payments from your electricity supplier for the electricity you generate PLUS a further 'export' payment for any electricity you feed back into the grid. And if you use the electricity you generate, you are also saving on your electricity bill. You can read more about this in REAL's consumer guide to Feed-In tariffs at [*URL to come*]

We have used the Energy Saving Trust cashback calculator to work out what this means for you. We have assumed that you will export xx% [insert as applicable eg 50% if out most of the day] to the national grid.

You will:

A. Earn 34.5p / 26.7p [delete as applicable] per kWh x 'z' = [generation income]

B. Earn 0.03p per kWh x [50%] 'z' = [export income] and

C. Save 0.13p per kWh x [50%] z = demand saved

Your total benefit per year = A + B + C

The Energy Saving Trust calculator can be found at:

www.energysavingtrust.org.uk/Generate-your-own-energy/Cashback-Calculator

REAL Guidance on Alternative Estimates

If a member also presents an alternative estimate calculated by using a different methodology or additional adjustment factors in the standard methodology, then the member must:

1. specify and justify the methodology used or additional adjustment factors used in the standard methodology;
2. explain any difference between the results using the alternative methodology/additional adjustment factors and those using the standard methodology;
3. give **at least equal prominence** to the estimate based on the standard methodology;
4. include the following warning, if the alternative estimate is significantly greater than the result given by the standard method:

'This estimate has been produced using [a methodology that differs from the Government's standard method/additional adjustment factors to the standard methodology – delete as applicable]. You should consider both estimates together.'