Energy Efficiency Commitment 2005-2008
Innovative Action

Decisions document

November 2005

Summary

The Electricity and Gas (Energy Efficiency Obligations) Order 2004 ('the Order') came into force on 22 December 2004 and established energy efficiency obligations for certain gas suppliers and electricity suppliers for the period 1 April 2005 to 31 March 2008. The Order provides an incentive to suppliers to achieve improvements in energy efficiency by way, in part, of innovative actions. The incentive is the accreditation of additional improvements in energy efficiency to count towards the supplier's energy efficiency target (established for it by the Authority under the Order).

This decisions paper outlines how Ofgem will assess whether a proposed activity is innovative action under the Order. Ofgem considers, following its consultation, that requiring a specified standard to be exceeded or a specified percentage improvement for each similar type of action to that used in the Energy Efficiency Commitment (EEC) 2002-2005 is consistent with the requirements of the Order and provides the greatest certainty to suppliers and manufacturers. This document therefore provides these standards.

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1. Introduction

1.1. The Electricity and Gas (Energy Efficiency Obligations) Order 2004 ('the Order') came into force on 22 December 2004. It follows on from the Electricity and Gas (Energy Efficiency Obligations) Order 2001 ("EEC 2002-2005"), establishing energy efficiency obligations for certain gas suppliers and electricity suppliers for the period 1 April 2005 to 31 March 2008.

1.2. The Gas and Electricity Markets Authority, referred to as Ofgem throughout this document, is required to carry out certain functions under the Order. Details of how Ofgem intends to carry out these functions are set out in the Energy Efficiency Commitment 2005 – 2008 Administration Procedures, December 2004[1].

1.3. Ofgem is required to apportion an overall target of 130 fuel-standardised, lifetime discounted terawatt hours (TWh) between obligated gas and electricity supply licensees. Those licensees are required to meet their targets by achieving improvements in energy efficiency attributable to qualifying actions. At least 50% of the total improvement attributed to the supplier's qualifying actions must be achieved in relation to the Priority Group, being domestic consumers receiving certain benefits or tax credits.

Quantifying improvements in energy efficiency

1.4. To quantify an improvement in energy efficiency, for all but fuel switching actions, Ofgem applies the same three step process used by Defra to establish the overall target of 130 fuel standardised, lifetime discounted terawatt hours.

i) Firstly, an annual energy saving (kWh/a) is determined for each action. This figure represents the improvement in energy efficiency achieved in a one year period.

ii) Secondly, fuel-standardisation multipliers, as detailed in the Order, are applied to the annual energy saving. The multipliers reflect the different carbon content of the fuels.

iii) Finally, the annual fuel-standardised energy saving is discounted at 3.5% per year over the estimated lifetime of the action to calculate the lifetime-discounted, fuel standardised energy savings. The 3.5% discount factor is the standard HM Treasury discount rate and was used in Defra's target setting model.

1.5. For example, with insulation actions, the annual energy saving for qualifying action is the difference in energy consumption before and after installation e.g. the energy required to heat a home to the same level before and after insulation has been installed. For measures which are installed in the physical fabric of a property (i.e. insulation and heating measures) the type of property and its number of bedrooms are relevant factors.

1.6. For fuel switching measures the annual energy saving is determined by subtracting the fuel standardised energy consumption of the domestic property after the new heating system is installed from the fuel standardised energy consumption prior to the new heating system being installed. This energy saving is then discounted at 3.5% over the lifetime of the measure to give the lifetime discounted fuel standardised energy saving.

1.7. A spreadsheet ("The EEC Scheme Spreadsheet") has been developed by Ofgem to calculate automatically the lifetime discounted, fuel-standardised energy saving (kWh/a) attributable to each action type for the purpose of the Order. An EEC Scheme Spreadsheet was developed for the purposes of the EEC 2002-2005 also and, as will be seen, the methodology used for evaluating the improvement in energy efficiency for the EEC 2002-2005 is relevant to establish whether an action is eligible for the innovative action uplift.

1.8. Defra consulted on its proposals for the Order in May 2004[2]. In its summary of responses[3] it stated that there was support for an incentive for new energy efficient technologies, such as micro CHP. Further, it stated that there was support for the principle that new technologies should be eligible for an incentive in the early stages of market penetration.

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[1] EEC 2005 – 2008 Administration Procedures, December 2004 is available on Ofgem's website www.ofgem.gov.uk
[2] The Energy Efficiency Commitment from April 2005, Consultation Proposals, Defra, May 2004
[3] The Energy Efficiency Commitment from April 2005, Summary of responses, Defra, December 2004

1.9. The Government concluded by stating it 'supports the development of new energy efficient technologies and proposes an incentive for innovative products, including micro CHP units with a maximum electrical capacity of up to 50kWe.'

1.10. The Order[4] includes an incentive for suppliers to carry out innovative action. Suppliers indicated that they would appreciate fuller information with respect to the uplift for innovative action than was available at the time Ofgem's Administration Procedures were prepared. In April 2005, Ofgem consulted on how the term "innovative action" should be interpreted. This document concludes that consultation process and sets out Ofgem's decisions on what can be considered innovative action. A summary of responses is also available on Ofgem's website www.ofgem.gov.uk. All other aspects of the EEC 2005-2008 are covered in Ofgem's Administration Procedures.

[4] Electricity and Gas (Energy Efficiency Obligations) Order 2004 – SI 2004 No. 3392

2. Background

2.1 "Innovative action" is defined in article 6(3)(b) of the Order as

"a qualifying action which is not energy service action and which –

(i) achieves an improvement in energy efficiency -

(aa) by a means which was not used in respect of an action by any supplier which was determined by the Authority as a qualifying action under article 8(1)(a) of the Electricity and Gas (Energy Efficiency Obligations) Order 2001, and

(bb) which the Authority is satisfied is significantly greater than that achieved by any similar action so determined; or

(ii) achieves an improvement in energy efficiency through the use of a micro-generation unit, as defined in Article 3(m) of Directive 2004/8/EC of the European Parliament and of the Council on the promotion of cogeneration based on a useful heat demand in the internal energy market"[5].

2.2 Where a supplier carries out an innovative action, Ofgem is required to attribute an improvement in energy efficiency to that action of 50% more than it would have otherwise, provided that the total improvement that would otherwise have been attributed to such actions is no more than 10% of that supplier's energy efficiency target.

2.3 Article 6(3)(b)(i)(aa) of the Order provides that a new means used in respect of a qualifying action may be innovative if it results in an improvement in energy efficiency. To be new, the means must not have been used in respect of an action determined as qualifying action under the EEC 2002-2005.

2.4 It follows that if an action type was not determined as qualifying action under the EEC 2002–2005, the technology associated with the action in question will be a new means for the purposes of article 6(3)(b)(i)(aa).

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[5] Being a cogeneration unit with a maximum capacity below 50kWe.

2.5 If article 6(3)(b)(i)(aa) has been satisfied, article 6(3)(b)(i)(bb) of the Order can be applied. It states that if a similar qualifying action was determined as qualifying action under the EEC 2002-2005, the action will be innovative action if it results in a 'significantly greater improvement' in energy efficiency than that achieved by the EEC 2002-2005 action.

2.6 Ofgem considers, following its consultation, that requiring a specified standard to be exceeded or a specified percentage improvement for each type of action is the appropriate application of article 6(3)(b)(i)(bb).

2.7 Ofgem considers that, where possible, stating the threshold to be exceeded for certain types of action to be innovative is consistent with the requirements of the Order and provides the greatest certainty to suppliers and manufacturers.

2.8 Details of thresholds or reasons why a significantly greater improvement is not likely to be achievable in the case of certain actions are provided in chapter 3. Ofgem considers, as a general guideline, in most cases that energy savings of 20% more than those for a similar action determined as qualifying action under the EEC 2002–2005 represent a significantly greater increase for the purpose of the uplift. Ofgem's underlying principle behind setting the thresholds given in this document is that they should be challenging and demonstrate a considerably larger improvement in energy efficiency above that achieved in the EEC 2002-2005. For some actions there is more scope for improvement such that a larger improvement in percentage terms will be considered "significantly greater" by Ofgem. For other actions, as improvements under the EEC 2002-2005 led to such efficient products, it is unlikely that any further improvement will be considered a significantly greater improvement for the purpose of the uplift.

2.9 Appendix 1 contains a table detailing actions taken under the EEC 2002-2005, the means used in respect of those actions and the key factors for determining the improvement in energy efficiency for each action.

2.10 It is important to be aware that what is an innovative action is a question of law and fact and ultimately a matter for the courts to determine. Any opinion expressed in this document is not a statement of the law and does not constitute legal advice to any person. It is for the Court to decide on the interpretation of statute should the need arise.

3. Innovative action

3.1. This section details the level of improvement Ofgem considers would represent a significantly greater improvement in energy efficiency compared to a similar action under the EEC 2002–2005 for each action type for the purpose of paragraph 6(3)(b)(i)(bb).

Eligibility

3.2. For a means to be classed as innovative action, it must comply with the requirements of articles 6(3)(b)(i)(aa) and 6(3)(b)(i)(bb).

3.3. Paragraph (3)(b)(i)(aa) provides that a qualifying action may be innovative action if it achieves an improvement in energy efficiency by a means that was not used in respect of a qualifying action under the EEC 2002-2005. It follows that a new action type also complies within this paragraph.

3.4. The 'means' in respect of an action is a reference to the technology employed e.g. the fibre used in cavity wall insulation to give it insulating properties. Eligibility for the uplift under this provision depends on the novelty of the means employed in relation to an action. Appendix 1 details the means used in respect of qualifying actions under the EEC 2002-2005.

3.5. In addition to the technology being novel, paragraph (3)(b)(i)(bb) requires that the improvement in energy efficiency must be significantly greater than that achieved by any 'similar' action determined as qualifying action under the EEC 2002-2005. Ofgem considers that for actions to be similar they should have the same application, function and effect in domestic premises. For example, a new type of cavity wall insulation material would be a similar action to cavity wall insulation that was installed under the EEC 2002-2005.

3.6. Paragraph (3)(b)(i)(bb) will only be applicable where a similar action was determined as qualifying action under the EEC 2002-2005. Where a similar action was not determined as qualifying action under the EEC 2002-2005, a novel action will be classed as innovative action if it achieves an improvement in energy efficiency compared to the energy consumption of the sales weighted average product of that type, or to the energy consumption of the product of that

type complying with an applicable legal minimum standard (e.g. where the Building Regulations apply to the product).

3.7. Under paragraph (3)(b)(i)(bb), to assess eligibility for the uplift, the improvement resulting from a qualifying action will be measured by Ofgem according to the methodology used for the accreditation in the EEC 2002-2005, i.e. according to the energy saving or key value for that similar action type. Appendix 1 outlines the actions that were determined as qualifying action under the EEC 2002-2005 and the key assumptions[6] used in calculating the improvement in energy efficiency for each one.

3.8. The determination of the improvement in energy efficiency for the purpose of establishing whether a supplier has met its target will be based on the methodology used to derive the energy savings given in the EEC Scheme Spreadsheet for the EEC 2005-2008. The 50% uplift is, if applicable, applied to the improvement. The EEC 2002-2005 methodology is used for the assessment of eligibility for the uplift only, not the determination of the improvement in energy efficiency in the EEC 2005-2008.

3.9. Ofgem is aware that certain products may have been promoted, but not notified, under the EEC 2002-2005. Such products may be notified under the Order and may be innovative if the relevant criteria are met.

3.10. For the purposes of the Order, innovative action is a qualifying action. Ofgem can only determine the improvement in energy efficiency, and any uplift, once it has received notification that the action in question has been completed.

3.11. The paragraphs below address the threshold that Ofgem considers an improvement in energy efficiency to be a significantly greater improvement compared to that achieved by a similar action under the EEC 2002-2005.

Significantly greater improvement

3.12. There is a natural variation in the improvements in energy efficiency achieved in relation to different products due to different thermal characteristics of properties and usage patterns by consumers. These variations are accounted for in the

average performance of products that are used in the energy efficiency improvement calculations carried out by Ofgem. An increase in the improvement in energy efficiency cannot be considered "significantly greater" for the purpose of the uplift where that level of improvement for each action was taken into account by Ofgem for the purpose of determining the improvement in energy efficiency.

Loft insulation

3.13. Loft insulation promoted by suppliers may be either professionally installed or for DIY installation.

3.14. The improvement in energy efficiency derived under the EEC 2002-2005 was based on loft insulation being installed so that the loft achieved a U-value of 0.16 W/ m^2K. The scale of the improvement in energy efficiency attributed to loft insulation was less for homes that already had some insulation, although the thermal characteristic of the loft after the insulation had been installed was broadly similar.

3.15. Even if a new technology were employed to insulate lofts, the remaining heat loss through the loft is small compared to the improvement in energy efficiency as a result of insulation. There is very little scope for decreasing the U-value of a loft, and consequently improving the energy efficiency over the standard used in the EEC 2002-2005. Accordingly, Ofgem considers it very unlikely that it will be possible to demonstrate a significantly greater improvement in energy efficiency with respect to loft insulation.

Cavity wall insulation

3.16. The improvement in energy efficiency derived under the EEC 2002-2005 was based on reducing the U-value of an external wall of a pre-1976 home from 1.44 W/ m^2K to 0.48 W/ m^2K or improving the U-value of an external wall of post-1976 home from 1.0 W/ m^2K to 0.42 W/ m^2K.

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[6] e.g. the U-value – the rate at which heat is lost through a through a particular construction.

3.17. While the change in the thermal characteristics of each type of property is different, the thermal characteristics of the walls of the premises post insulation are quite similar, a U-value of 0.48 W/m^{2}K for the pre-76 property and 0.42 W/m^{2}K for the post-76 property. It is on this basis that Ofgem considers it appropriate to set a single threshold for cavity wall insulation for suppliers to demonstrate a significantly greater improvement in energy efficiency.

3.18. The determination of an improvement in energy efficiency for cavity wall insulation under the EEC 2002-2005 was based on the assumptions that an unfilled cavity is of a fixed width and that the material used has a lambda, or thermal conductivity,[7] of 0.04 W/mK. These assumptions remain the same for the purpose of accreditation in the EEC 2005-2008. When comparing products, all other things being equal, a lower lambda value will equate to greater energy savings.

3.19. Ofgem considers that a 20% increase in energy efficiency improvement for cavity wall insulation would be suitable to demonstrate a significantly greater improvement in energy efficiency. A cavity wall insulated with a product that has a lambda of 0.023 W/mK would meet this requirement.

3.20. The lambda value of new products should be verified by way of an independent third party quality assurance scheme e.g. the British Board of Agrément or BRE Certification.

Draught-proofing

3.21. The energy saving attributed to draught proofing in the EEC 2002-2005 was based on reducing the air infiltration of a property by 0.15 air changes per hour, which can be approximately expressed as 0.15 m^3/h/m^2. The improvement in energy efficiency from draught-proofing windows and doors is quite low as, in general, only a small proportion of the heat loss from a home is by these means.

3.22. Ofgem considers that to claim the incentive for draught-proofing, any new technology should be expected consistently to reduce the air permeability result

[7] The thermal conductivity is the measure of the thermal properties of a product. A low value demonstrates that the product conducts less heat and is a good insulator.

of a pressurisation test from around 11 $m^3/h/m^2$ at 50 Pascals, a typical level, to less than 7 $m^3/h/m^2$ at 50 Pascals.

3.23. The performance of any product will need to be independently verified and the results will need to be submitted to Ofgem. To ensure that improvements in energy efficiency for draught-proofing are realised, suppliers should ensure that draught-proofing products are targeted at homes that are expected to have a high degree of air infiltration.

External wall insulation

3.24. Under the EEC 2002-2005, a number of different products were used to improve the thermal characteristics of properties with solid walls from a U-value of 2.1 W/ m^2K to a variety of different U-values ranging from 0.35 W/m^2K to 0.45 W/m^2K. To claim the incentive for innovative action suppliers will need to demonstrate a significantly greater improvement in energy efficiency over the best level achieved in the EEC 2002-2005, 0.35 W/m^2K.

3.25. Ofgem considers that suppliers should be able to claim the incentive for innovative action when a new technology in external wall insulation results in the U-value of the external wall falling from 2.1 W/m^2K to 0.2 W/m^2K or better. This is a similar absolute improvement to that proposed for cavity wall insulation.

3.26. For the avoidance of doubt, installing a thicker level of the same type of insulating material to that used in the EEC 2002-2005 to achieve the thermal characteristic outlined above will not qualify for innovative action.

Internal wall insulation

3.27. Internal wall insulation products accredited under the EEC 2002-2005 have led to a variety of improvements in energy efficiency because of the varying nature of the products that have been used. The best performing products led to a similar improvement in energy efficiency as external wall insulation.

3.28. Given that the thermal characteristics of walls prior to installation of insulation is the same as for external wall insulation, Ofgem considers it appropriate to set the same target U-value of 0.2 W/m^2K for the purpose of the incentive .

3.29. As for external wall insulation, installing a thicker level of the same type of insulating material to that used in the EEC 2002-2005 will not be considered innovative action.

Hot water tank insulation

3.30. The energy saving attributed to tank jackets is based on a comparison of the market average thickness of insulation and the thickness of the jackets being installed.

3.31. Given the fact that tank jackets currently installed allow for very little heat loss, Ofgem considers that there is no possibility of action in respect of installation of tank jackets resulting in a significantly greater improvement in energy efficiency.

Radiator panels

3.32. Radiator panels installed for EEC 2002-2005 purposes were all of a saw tooth design with a reflective surface. The energy savings resulting from installation of certain radiator panels were increased during the EEC 2002-2005 period due to a change to the methodology for the calculation of the energy savings. For the avoidance of doubt, any increase in energy savings resulting from a change to the methodology for calculating an energy saving is irrelevant to the question of whether an action is innovative.

3.33. In the absence of any further information on the radiator panel products that are being developed, Ofgem considers that to claim the incentive a 20% increase in energy savings attributed to radiator panels should be achieved.

Lighting

3.34. The lighting products accredited in the EEC 2002-2005 were based on compact fluorescent (CFL) technology only.

3.35. The energy savings from the use of low energy lighting are dependent on the difference between the wattage of the CFL promoted and the wattage of the GLS equivalent being replaced (the usage for both is assumed to be the same).

Monitoring research carried out under the EESoP 3[8] programme suggests that the average CFL installed saves 78% of the electricity demand for that fitting. Energy savings attributed under the EEC 2002-2005 and the EEC 2005-2008 reflect this.

3.36. There are a number of alternative lighting products being brought to the market. They will only be considered innovative under the Order if they lead to a significantly greater improvement in energy efficiency compared to CFLs.

3.37. Ofgem considers that the improvement compared to lighting actions under the EEC 2002 – 2005 should be 10% more, ie on a like for like basis the new lamp would lead to an 86% reduction in the electricity demand for that light fitting.

3.38. It is worth noting that Ofgem has capped the lifetime of lighting action for the purpose of attribution of energy savings for CFLs[9], in line with Defra's target setting model. Further, it should be noted that an increased lifetime over that taken into account in the energy saving calculation methodology for the EEC 2002-2005 will not result in a significant improvement in energy efficiency for uplift purposes.

Heating measures that provide both heat and hot water for domestic premises

3.39. Under the EEC 2002-2005, suppliers proposed a number of different heating and hot water measures although only condensing gas boilers were attributed an energy saving. The improvements in energy efficiency attributed to boilers was dependent on the efficiency of the boiler installed compared to the efficiency of a boiler complying with the minimum standard under the Building Regulations, roughly the difference in energy consumption between a property with a 78% efficient boiler and a property with a 90% efficient boiler.

3.40. The boilers[10] installed for the purposes of the EEC 2002-2005 are amongst the most efficient possible and, as such, they are approaching the limits of the

[8] Energy Efficiency Standard of Performance 3, the supplier energy efficiency programme that ran between April 2000 and March 2002.
[9] This is necessary to eliminate the potential for the longest lifetime CFLs being promoted over other CFLs without due consideration for consumers' aesthetic preferences
[10] For the avoidance of doubt this does not include MCHP.

seasonal efficiency that can be calculated for boilers based on the SEDBUK[11] database equations.[12] Consequently, the improvements under the EEC 2002–2005 are almost the highest possible for boilers.

3.41. The improvement in energy efficiency achieved by the most efficient upgrades above the Building Regulations minimum standard for gas, LPG and oil under the EEC 2002-2005 is set out in the table below. In the absence of any further information, Ofgem considers that a 20% increase in the improvement of energy efficiency above the standard achieved under the EEC 2002-2005 (also set out in the table) would be enough to demonstrate a significantly greater improvement in energy efficiency. In the case of gas or LPG fired boilers, Ofgem notes that this threshold is above the efficiency threshold attainable on the SEDBUK database and it is therefore very unlikely that suppliers will be able to claim for the uplift for innovative action for these measures.

Table 1: Boiler efficiencies required to demonstrate a significantly greater improvement in energy efficiency than the improvement in energy efficiency achieved in the EEC 2002-2005

	Building Regulations standard to March 2005	Maximum efficiency of boilers installed under the EEC 2002-2005	Efficiency required to demonstrate a significantly greater improvement in energy efficiency
Gas	78%	91.3%	94%
LPG	80%	92.6%	95.1%
Oil	85%	95%	97%

3.42. Other heating and hot water products were installed for EEC 2002-2005 purposes and schemes where the heating fuel has been switched to gas from a more carbon intensive fuel have been promoted.

[11] Seasonal Efficiency of Domestic Boilers in the UK.
[12] The basis on which the efficiency of all boilers is calculated.

3.43. The energy saving for fuel switching is based on the difference in the fuel-standardised energy consumption of a house heated by one fuel as opposed to another fuel with a lower carbon content. The energy saving accredited to a supplier is based on it installing, for instance, a gas-fired boiler to the required standard under the Building Regulations. Given that the basis of these calculations is the minimum legal standard, Ofgem proposes that it will not be possible to consider fuel switching innovative action as there is no potential for improvement beyond that required by law.

3.44. No other heating or hot water measures were accredited under the EEC 2002-2005. However, there are a number that are near to the market that will lead to an improvement in energy efficiency. Ofgem considers that the most appropriate way to determine whether these measures should be considered innovative action is to assess them based on the comparison of the improvement in energy efficiency that results from the service they provide. For instance, solar water heating reduces energy demand for the provision of hot water only and the improvement in the energy efficiency would be assessed on the improvement achieved in water heating compared with that achieved by the most efficient boiler used in the EEC 2002-2005. Ground source heat pumps, however, can replace the total heat and hot water demand for a domestic premises and the improvement in energy efficiency would be assessed on this basis. Ofgem considers that a 20% increase in the energy efficiency improvement for heating and/or hot water measures would be suitable to demonstrate a significantly greater improvement in energy efficiency.

3.45. The energy saving depends on the method of heating and hot water provision before the installation of the alternative product. The improvement in energy efficiency achieved is highly dependent on the heating fuel of the property prior to installation.

Heating controls

3.46. A variety of different heating control products were promoted by suppliers under the EEC 2002-2005. The energy savings from heating controls depend on whether the control is installed with a boiler or not and the type of controls that are already present in the property. Where a boiler has been replaced there will

only be an improvement in energy efficiency if the requirements of the Building Regulations are exceeded.

3.47. Evaluating the energy savings from the different heating controls is difficult because of the small change in the heat balance of a domestic property. An improvement in energy efficiency that arises from heating controls needs to be evaluated using a thermal simulation model.

3.48. Ofgem considers that a 20% improvement in energy efficiency from heating controls compared with the controls that have been installed under the EEC 2002-2005 would demonstrate a significantly greater improvement in energy efficiency. This improvement should, in the case of heating controls installed with a new boiler, be a 20% increase over the improvement in energy efficiency of a heating system installed to the Building Regulations minimum compared to a system controlled with the most efficient heating controls installed under the EEC 2002-2005. In the case of heating controls being installed without a boiler, this improvement should be a 20% increase over the improvement in energy efficiency of an uncontrolled heating system compared to a system controlled with the most efficient heating controls installed under the EEC 2002-2005.

3.49. Given below are the types of heating controls that were installed under the EEC 2002-2005.

- room thermostat
- boiler interlock
- delayed start functionality
- weather or load compensation
- time and temperature zone control, and
- TRVs.

Heat recovery ventilation

3.50. The energy saving attributable for heat recovery ventilation for a single room is dependent on the power of the extractor fan and the effectiveness of the heat exchanger in the unit. There was only one type of heat recovery unit installed under the EEC 2002-2005. The heat recovered per kWh of electricity used by the unit was 8.5 kWh. Ofgem considers that a 20% improvement in energy

efficiency at the same operating conditions, 1 hour boost and 23 hours trickle, would be suitable to demonstrate a significantly greater improvement in energy efficiency for these units. This would be achieved by a new heat recovery unit that recovered 10.2 kWh of heat per kWh of electricity consumed by the unit.

Cold appliances

3.51. The amount of energy savings attributable to a cold appliance, ie fridges, freezers and fridge freezers, is dependent on the type of appliance promoted and the way it is delivered to the consumer (known as "the delivery route"). There are three delivery routes for cold appliance schemes: incentive, trade-in and fridgesaver schemes. Both the delivery mechanism and the particulars of the product dictate the improvement in energy efficiency that will result from the action.

3.52. In the case of incentive schemes, consumers are encouraged to purchase a more efficient appliance than they might have purchased otherwise. The savings for incentive schemes are based on the sales weighted average energy consumption of similar appliances and the consumption of the product being promoted.

3.53. In the case of trade-in schemes, consumers are able to trade in a working appliance for a more efficient alternative. In this case, the energy saving is two-fold. Firstly, by removing the existing inefficient appliance from the market, higher energy consumption is avoided. Secondly, a more efficient appliance is purchased than would normally have been the case.

3.54. Fridgesaver schemes operate in a similar way to trade in schemes but are limited to Priority Group consumers with an appliance in bad condition. The energy savings are again higher for the same two-fold reason as that given for trade-in schemes.

3.55. A novel "means" in respect of the appliance, i.e. a new technology must be shown for there to be a possibility of the action being innovative. The delivery route element of the energy saving will not be relevant to eligibility for the uplift.

3.56. Ofgem will calculate disaggregated energy savings for cold appliance schemes so that the energy savings attributable to the appliance and to the delivery

mechanism distinctly are available (the greatest proportion of the improvement is attributable to the delivery mechanism).

3.57. All of the energy savings claimed for cold appliances under the EEC 2002-2005 have been for the promotion of A-rated appliances and these have broadly led to a 28% improvement in energy efficiency. On 1 July 2004, A+ and A++ ratings were introduced, but none were accredited as qualifying action in the EEC 2002-2005. Therefore, to demonstrate a significantly greater improvement in energy efficiency, Ofgem considers that suppliers should be required to promote A+ and/or A++ appliances. This would represent roughly a 60% improvement in energy efficiency above the improvement in energy efficiency achieved by an A rated appliance. While this is more than for most other measures, Ofgem considers it appropriate to encourage the most efficient models to be brought to the market.

Wet appliances

3.58. The energy savings attributed to wet appliances, ie washing machines and dishwashers, are dependent on the type of appliance and the way it is delivered to consumers. For wet appliances there are two delivery routes: trade-in schemes and incentive schemes.

3.59. As for cold appliance schemes, the increased energy savings for trade-in schemes result from a two-fold improvement in energy efficiency – firstly, from removing an old, less efficient appliance from use and secondly from the promotion of a more efficient appliance. As for cold appliances, the delivery route element of the energy saving will not be eligible for the uplift.

Washing machines

3.60. Suggesting a threshold for innovative action for washing machines is not as clear cut as for cold appliances as the appliances currently being promoted are in the highest efficiency rating. However, it has been suggested that a new A+ rating might be introduced for washing machines and this would represent a 40% improvement over the A-rated standard achieved in the EEC 2002-2005; the energy consumption per wash would fall from 0.19 kWh/kg of wash to 0.17 kWh/kg of wash. Ofgem considers that this threshold should be used to

demonstrate a significantly greater improvement in energy efficiency for washing machines. While this is higher than the standards for some of the other measures it reflects the improvements in energy efficiency that have been seen in washing machines since the EEC 2002-2005 was set up.

Dishwashers

3.61. Suggesting a standard for dishwashers is also difficult because the appliances delivered by the suppliers are already in the highest energy efficiency rating. There are no proposals to introduce an A+ rated category for dishwashers as there is little evidence that further improvements in energy efficiency are attainable. Accordingly, Ofgem considers it very unlikely that it will be possible to demonstrate a significantly greater improvement in energy efficiency with respect to dishwashers.

Jug kettles

3.62. Under the EEC 2002-2005 some suppliers distributed jug kettles. The energy savings attributed to kettles were based on the requirement that certain delivery criteria were met. As jug kettles are now the market norm they cannot be considered qualifying action under the EEC 2005-2008.

3.63. However, Ofgem is aware that other kettle designs are being brought to the market. If these can demonstrate a 20% improvement in energy efficiency over that achieved by the kettles in the EEC 2002-2005 under the same delivery criteria, then they will be considered as innovative action.

Community based combined heat and power

3.64. Combined heat and power involves the simultaneous generation of useful heat and electricity. Because of the resulting high operational efficiencies, this type of technology is considered energy efficient.

3.65. In the Energy White Paper[13] the Government stated that it would consider an incentive for CHP under the EEC. The Order contains an incentive for CHP actions of less than 50kWe.

3.66. With respect to large scale CHP schemes, they may be considered qualifying action under the Order and as none were approved as qualifying action under the EEC 2002-2005 they could be considered innovative action.

Community based heating schemes

3.67. Under the EEC 2002-2005, boilers used in community heating schemes, ie those that do not generate electricity, are amongst the most efficient boilers available. Ofgem therefore considers it unlikely that suppliers will be able to demonstrate a significantly greater improvement in energy efficiency from this type of action.

[13] Energy White Paper, 'Our energy future – creating a low carbon economy', Cm 5761, February 2003.

Appendix 1 Means used in respect of an action under the EEC 2002-2005

Action determined under Article 8(1) of the Electricity and Gas (Energy Efficiency Obligations) Order 2001	**Means used**	**Uninsulated, business as usual or legal minimum standard**	**Standard installed to under the EEC 2002-2005**	**EEC 2002-2005 energy saving derived from:**
Loft insulation	Rockwool, mineral wool, cellulose fibre, sheep's wool	U-value of 2.3 W/m^{2}K	U-value of 0.16 W/m^{2}K	Reduction in U-value to 0.16 W/m^{2}K
Cavity wall insulation	Rockwool, mineral wool, polystyrene beads	Pre–76 properties U-value of 1.44 W/m^{2}K, Post–76 properties U-value of 1.0 W/m^{2}K	Pre–76 properties U-value of 0.48 W/m^{2}K, Post–76 properties U-value of 0.42 W/m^{2}K	Reduction in U-value to 0.48 W/m^{2}K in pre-76 homes and 0.42 W/m^{2}K in post-76 homes
Draught proofing	Draught stripping	NA	NA	A reduction in air infiltration of 0.15 m^3/h/m^2

Action determined under Article 8(1) of the Electricity and Gas (Energy Efficiency Obligations) Order 2001	**Means used**	**Uninsulated, business as usual or legal minimum standard**	**Standard installed to under the EEC 2002-2005**	**EEC 2002-2005 energy saving derived from:**
External solid wall insulation	Extruded polystyrene, expanded polystyrene, Mineral Fibre (Rockwool) Insulation Boards, phenolic foam, mineral wool slab, phenolic boards, urethane foam, Alsecco EWS, phenolic foam laminate, PVC aggregate faced cladding system, Alumasc Insulation slab, permarock, mineral fibre insulation board, Jablite, Rockwool, Thespa meteon, mineral wool	U-value of 2.1 W/m^2K	U-value of 0.35 W/m^2K	Reduction in U-value to 0.35 W/m^2K
Internal solid wall insulation	Extruded polystyrene, phenolic foam, mineral wool quilt, urethane foam, Gyprock thermal board, Sempatap	U-value of 2.1 W/m^2K	U-value of 0.37 W/m^2K	Reduction in U-value to 0.37 W/m^2K

Action determined under Article 8(1) of the Electricity and Gas (Energy Efficiency Obligations) Order 2001	**Means used**	**Uninsulated, business as usual or legal minimum standard**	**Standard installed to under the EEC 2002-2005**	**EEC 2002-2005 energy saving derived from:**
Hot water tank insulation	Installation of hot water tank insulation to 80mm	The market average insulation on a hot water tank	80 mm of insulation	Improving the insulation on hot water tanks to 80mm
Radiator panels	Saw tooth design with reflective surface	A radiator with no panel present	Installation of a saw tooth radiator panel to the area behind the radiator	The area of radiator panels installed behind radiators in a domestic property
Lighting	CFLs	GLS lamp	The CFL equivalent	Difference in energy consumption of a GLS lamp and a CFL equivalent
Heating measures that provide both heat and hot water for the domestic premises	Condensing gas boilers	Building Regulations minimum standard	High efficiency boilers, roughly 90% efficient	Difference in energy consumption between the condensing boiler and the legal minimum

Action determined under Article 8(1) of the Electricity and Gas (Energy Efficiency Obligations) Order 2001	**Means used**	**Uninsulated, business as usual or legal minimum standard**	**Standard installed to under the EEC 2002-2005**	**EEC 2002-2005 energy saving derived from:**
				standard
Heating controls	Room thermostat, delayed start thermostat, TRVs, boiler interlock, weather or load compensation and time and temperature zone control	When installed with a boiler the legal minimum standard. When installed without a boiler - no controls	A variety of different controls	Difference in energy consumption between the existing heating system and the system with the new controls
Heat recovery ventilation	Single room heat recovery extractor unit	Extractor fan without heat recovery	8.5 kWh of recovered heat per kWh of electricity used by the unit	Difference in household energy consumption between a home with a single room extractor fan without heat recovery and home with a single room extractor fan with heat recovery

Action determined under Article 8(1) of the Electricity and Gas (Energy Efficiency Obligations) Order 2001	**Means used**	**Uninsulated, business as usual or legal minimum standard**	**Standard installed to under the EEC 2002-2005**	**EEC 2002-2005 energy saving derived from:**
Cold appliances	A rated appliances	Sales weighted average consumption	A rated	Difference between the sales weighted average consumption and the A-rated model
Washing machines	A rated appliances	Sales weighted average consumption	A rated	Difference between the sales weighted average consumption and the A-rated model
Dishwashers	A rated appliances	Sales weighted average consumption	A rated	Difference between the sales weighted average consumption and the A-rated model