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MINIMUM INCOME STANDARD - WORKING PAPER

The fuel budget standard

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Background

This paper covers the rationale and methods used to produce estimated fuel costs as part of the Minimum Income Standard (MIS) for households living in Great Britain. The budget standard is required to meet a socially acceptable and minimum level of consumption as defined by the MIS groups.

> ***A minimum standard of living includes, but is more than just, food, clothes and shelter. It is about having what you need in order to have the opportunities and choices necessary to participate in society.***
>
> ***(MIS groups' definition of acceptable minimum)***

The fuel component of the budgets is calculated at the level necessary to maintain the health and well being of the householders and the fabric of the home.

A range of dwellings were used to estimate fuel costs. These were selected in line with the minimum type of accommodation the groups decided each household would need. They were based on the assumption that they would need to meet the government's bedroom and fitness standards (adequate bedroom space, reasonable state of repair, modern facilities and services and a reasonable degree of thermal comfort).[1] The calculation of numbers in fuel poverty used by DEFRA and the DTI is based on the assumption that even people on lower incomes should be able to afford to keep their homes warm using an adequate standard of warmth. The World Health Organisation recommends that temperatures should be 21°C in the living

[1] Ministry of Housing and Local Government (1961) *Homes for Today and Tomorrow*, London, HMSO (Parker Morris Report).

area and 18°C in other occupied rooms (bathroom, bedroom, kitchen and hallways).[2] If temperatures and the number of hours the heating is on for are reduced below a reasonable degree of comfort the relative humidity in the property increases, especially during unheated periods. Ideally relative humidity should be kept below 60 per cent to discourage house dust mites in bedding and furniture. Above 70 per cent condensation on walls is likely to lead to mould growth and when temperatures fall below 16°C loss of resistance to respiratory disease may occur. In vulnerable households, especially the elderly, a cold home brings significant risk of cardiovascular illness and reduced internal body temperatures.[3] A mean 24-hour temperature of 16°C with adequate ventilation of 0.8ach (air change per hour) will result in the relative humidity being below 60 per cent with normal moisture production. The 'normal' heating pattern for occupants who spend some time away during the day is generally assumed to be that the heating should be on for 9 hours a day during the week and 16 hours at weekends.

Fuel Budgets Methods

The research method for estimating the amount of fuel needed in the home for specific family types was informed by public consensus as to what type and size of property was considered appropriate as a minimum requirement. The role of the fuel expert was to reconcile the group decisions on housing size and heating regimes with a standard of fuel use that would allow occupiers to feel warm and comfortable in their homes.[4]

The discussion groups

The first stage of discussion groups (the orientation groups) helped to develop the definition of a minimum acceptable standard of living and the housing requirements for a range of case-study vignettes. The next stage (the task groups) used the definition to identify the needs of the case study individuals. The discussion groups were drawn from members of the public from a range of backgrounds and income

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2 DEFRA (November 2001) The UK Fuel Poverty Strategy, p-6.

3 This is well documented by Collins KJ et al., (1985) "Effects of age on body temperature and blood pressure in cold environments" and Collins KJ 1986 "Low indoor temperatures and morbidity in the elderly."

4 The MIS fuel expert was Bill Wilkinson of Energy Audit.

groups. Groups consisted of people from the individual and household types under discussion, so for example, single pensioners discussed and agreed the needs of the single pensioner. The minimum requirements for housing identified by the groups ranged from a studio flat or one-bed flat for single people and pensioner couples, a two-bed flat for younger couples without children and a two-bed house for families with one child. The task groups discussed the needs of the inhabitants in terms of heating regimes, temperature demand settings and heating sources. Gas central heating was agreed in all cases.

The Expert

The dwelling descriptions agreed by the discussion groups were refined to meet the minimum standard requirements laid down by regulatory bodies for housing and household size. It is important to note that the minimum definition for house-size adequacy agreed by the discussion groups did not always match what is generally reported by social survey as typical for that particular population group. These differences remain in the budget standard with the exception of one case (pensioner couple) where space was found not to meet the Parker Morris standard. For this household a two-bed flat was substituted for the one-bed flat originally specified. When producing one, two, three or four child households the rule for allocating bedroom space was based on sole room occupancy given to an older secondary school child with younger children sharing (GHS 'bedroom standard')[5]. The largest house for families is a four bedroom dwelling with all bedrooms on the upper floor.

The JRF Housing Department provided six housing examples that met the specifications for space and household type. To facilitate fuel assessment (and for the pricing of curtains and floor covering) floor plans with dimensions, gas central heating system specifications and energy efficiency levels and insulation standards were also supplied. The demand temperature and 'on' periods was set to keep relative humidity in the house under 60 per cent. Many of the heating regimes supplied by the task groups were contrary to this, particularly in the case of single

[5] 'A separate bedroom is allocated to each married couple, any other person aged 21 or over, each pair of adolescents aged 10-20 of the same sex, and each pair of children under 10. Any unpaired person aged 10-20 is paired if possible with a child under 10 of the same sex, or, if that is not possible, is given a separate bedroom, as is any unpaired child under 10 (GHS 1989).

people of working age. The fuel expert's recommendations for heating regimes that would meet the requirements for maintaining the health of the occupants and the fabric of the building were discussed with the checkback groups. These groups agreed to include the expert's recommendations in the budgets. See Table 1 (below) for the resulting fuel specifications.

Table 1 Housing specifications and heating regimes

Family type	**Dwelling and heating description**
Single male, female	1-bed mid terrace ground floor flat, heating period 9 hours day, at 20°C.
Couple with no children	2-bed ground floor flat, heating 6 hours day, 12 at weekends, at 21°C
Single pensioner	1-bed mid terrace ground floor flat, heating 21°C 16 hours a day.
Couple pensioner	2-bed ground floor flat, heating period 16 hours day, at 21°C.
Lone parent one (toddler) child Couple one (toddler) child	2-bed end terrace house, heating period 16 hours day, at 21°C.
Lone parent or couple two children, pre-school, primary school	3-bed mid terrace, heating period 16 hours day, at 21°C. (pre school child in family)
Lone parent or couple three children, pre-school, primary school, secondary school.	4 bed house, heating period 16 hours day, at 21°C. (pre school child in family)
Couple four children, toddler, pre-school, primary school, secondary school.	4 bed house, heating period 16 hours day, at 21°C. (pre school child in family)

The groups agreed that social housing, rather than privately rented or owner-occupied accommodation would be the minimum requirement in order to meet the definition. Using the social housing sector to set housing costs such as rent, water rates, council tax, house maintenance costs and fuel costs was potentially controversial for a number of reasons:

- Social housing only accounts for 19 per cent of the homes in England[6]. Although all household types were found in such housing, younger people would usually not be housed in this tenure unless classified as vulnerable. Older people who have raised a family are also typically found still living in houses larger than the groups said would be the minimum necessary to meet their needs, and despite low pension levels, the majority of the owned-outright housing sector is made up of pensioner households.
- Social housing tends to have better energy efficiency ratings than usually found in private rent or owner occupied housing. On average, the social sector has a SAP (Standard Assessment Procedure) rating of 58 compared to 50 in the private sector.[7] The social sector has improved its average thermal rating more rapidly year-on-year than the private sector, through a policy of replacing boilers as soon as they become inefficient. The English House Condition Survey 2006 shows one in four social homes have a SAP rating of more than 70 compared to one in ten private homes.[8]

The overriding benefit of using social housing was that there is little variation in rent levels and allocation policies in relation to household size across different local authorities. The average rent per week of 2.4 million council dwellings in 2007 was £58.24 compared to £72.81 in the South East (including London) and £61.01 in the Charnwood area of the Midlands (MIS pricing area).[9]

Calculation of fuel use and cost

The average weekly fuel use and cost for each household and house combination were calculated using BREDEM 12 (British Research Establishment Domestic Energy Model). The programme calculates separately the requirements for space heating, hot water, cooking, lighting and use of appliances. Cavity wall insulation,

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6 Departments for Communities and Local Government (2006) English House Condition Survey 2004: Annual Report: Decent Homes and Decent Places. www.communities.gov.uk (page 5). In 2004 this survey found social sector accounts for 19 per cent of homes of homes in England of which 11 per cent are local authority owned and eight per cent owned by registered social landlords.

7 SAP (Standard Assessment Procedure) is an index of energy efficiency. It is based on calculated annual space and water heating costs for a standard heating regime for a home and is expressed on a scale of 1 (highly energy inefficient) to 120 (highly energy efficient).

8 Departments for Communities and Local Government (2006) English House Condition Survey 2004: Annual Report: Decent Homes and Decent Places. www.communities.gov.uk (Page 10).

9 CIPFA Housing Rent Statistics 2007 - on-line services.

loft insulation and double glazing were included as common features of social housing, and air-exchange values were set as part of the technical specification of the programme. No allowance was made for secondary heating in these cases as the MIS model houses had no facility for a flue for a gas fire and adding an electric fire would increase running costs. The quantity of heat is calculated per month assuming that the desired temperature is reached during the times the heating is on. The amount of gas burned varies with the weather and this is adjusted on a monthly basis according to average external temperature in the calculation. There is no adjustment to the hours of heating during summer or winter as the adjustment is to the frequency that the boiler fires to achieve the desired result, for example the boiler fires up much less in cooler months as it needs a greater degree of continual running to maintain the temperature. Table 2 shows the estimated fuel use for each family type in the relevant housing type.

Table 2 Fuel consumption for different family types

	Space heating (therms)	Hot water (therms)	Cooking (therms)	Total kWh gas	Cooking electric	Lights and appliances (kWh)	Total kWh electric
Households with no children							
Single person working age	3528	2889	500	6917	278	1722	2000
Couple working age	3667	3278	583	7528	333	2028	2361
Single pensioner	4639	2889	500	8082	278	1722	2000
Couple pensioner	4862	3278	483	8724	333	2028	2361
Households with children							
Lone parent, one child (1)	12834	3889	583	17307	333	2611	2945
Lone parent, two child (3, 8)	12445	5167	667	18279	389	2972	3361
Lone parent, three child (3, 8, 14)	9751	5000	750	15501	417	3917	4334
Couple, one child (1)	11668	4611	667	16946	389	3195	3584
Couple, two child (3, 8)	11362	5973	750	18085	417	3500	3917
Couple, three child (3, 8, 14)	8917	5667	833	15418	472	4556	5028
Couple, four child (1, 3, 8, 14)	8001	6362	917	15279	528	5167	5695

Note that the 4-bed house (1954 build) used for households with three or four children has smaller overall floor dimensions than the 3-bed house (1925 build).

BREDEM 12 calculates use according to the number of people who occupy the house. It should be noted that in an efficient heating system fitted with thermostat radiator control, the greater the number of people in the same size dwelling marginally reduces household use of fuel for space heating. In terms of non-heating energy, the BREDEM 12 calculation is presently under revision due to recent changes in trends for greater use of appliances such as large TV systems and computer games. The current energy estimate for lighting and appliances and water heating are averages for any given number of people and floor areas and therefore remain adequate for a minimum income standard.

The cost of the fuel in April 2008 was based on a supply by Scottish Power, as a mid-range provider, for a direct debit duel fuel payment. (Gas 2.922p/kWh, Electricity 8.72p/kWh, with standing charges of £102.13, including VAT at five per cent, with a dual fuel discount of £10.50). Table 3 sets outs the weekly fuel costs for households with and without children. There is a change of about £20 to £30 per year for households with school-age children where the heating period would be reduced during the school terms.

Table 3 The cost of fuel for different family types. (*April 2008 prices in £s. per week)*

	House type	Cost per week	Cost if youngest child a pre school child	Cost if youngest child a school child
Households with no children				
Single person working age	1-bed flat	9.00		
Couple working age	2-bed flat	9.95		
Single pensioner	1-bed flat	9.63		
Couple pensioner	2-bed flat	10.62		
Households with children				
Lone parent, one child (aged 1)	2-bed house		16.43	15.77
Lone parent, two child (ages 3, 8)	3-bed house		17.67	17.01
Lone parent, three child (ages 3, 8, 14)	4-bed house		17.74	17.23
Couple, one child (aged 1)	2-bed house		17.29	16.69
Couple, two child (ages 3, 8)	3-bed house		18.88	18.49
Couple, three child (ages 3, 8, 14)	4-bed house		18.86	18.39
Couple, four child (ages 1, 3, 8, 14)	4-bed house		19.90	19.46

MIS compared to actual spending

In Table 4 the MIS expenditure is compared with actual spending on fuel in relation to four selected household types. MIS is compared to three levels of expenditure patterns:

- Mean fuel expenditure of all families of that type in the Expenditure and Food Survey (EFS)
- Mean fuel expenditure of all families of that type in the EFS who are receiving means tested benefits.
- Mean fuel expenditure of all families of that type in the EFS living in social housing.

The EFS analysis uses five years of data 2001-2006 to achieve a good sample size. Each year's EFS data have been inflated by movements in prices to April 2008, which is the pricing date of MIS. The EFS is based on fortnightly household diaries. The sensitivity of the MIS fuel estimates were checked against the EFS for the range of family types specified and explanations sought for major differences.

The MIS estimate of what a households needs to spend on fuel are lower than the mean of real spending of all EFS households of the selected types and all households living on Income Support. The exception is the lone parent with one child. The likely reason for this is that the average expenditure of lone parents is low given that nearly half of them are dependent on Income Support for their income. The proportion of the budget standard spent on fuel by MIS households is between five per cent and six per cent (lone parents 7.8 per cent) which is significantly lower than the DEFRA fuel poverty threshold of 10 per cent.[10]

Single working age households

The MIS total of £9 for fuel is £5.37 less than mean expenditure for this group and about £2 per week less than the mean spending for people claiming Income Support and those living in social housing. Comparing the proportion of the household weekly budget taken up by fuel costs (budget share), the MIS household needs to spend proportionally less on fuel than households on IS or in social housing.

[10] Excluding housing costs.

Pensioner couple

The MIS total of £10.62 is about 50 per cent of the mean for all EFS households, £7.53 less than those EFS households receiving Income Support and £4.31 less than fuel expenditure for similar households living in social housing. The MIS fuel expenses represent five per cent of the budget standard compared to six per cent of 'all households' total expenditure; eight per cent of similar households living on IS and seven per cent of those in social housing.[11]

Couple with two children

The MIS total of £18.49 per week is £6.24 short of the mean spending of all EFS households of this family type, £1.71 less than those receiving IS, and £0.99 more than those living in social housing. As a share of total expenditure the EFS average households spend four per cent of their budget on fuel compared to those living in social housing and MIS households who spend five per cent. However, those households reported in the EFS who rely on Income Support spend seven per cent of their total expenditure on fuel.

Lone parents with one child

The MIS total of £16.43 is within £0.53 per week the mean of all households and about £3 more than the average of households receiving IS or those in social housing. As a share of total expenditure, MIS households spend a similar proportion of total expenditure on fuel to households living in social housing, one per cent less than those claiming Income Support and about 2.5 per cent more than the mean of 'all households'.

[11] All percentages are rounded.

Table 4 A comparison between actual spending on fuel and the MIS spending

	EFS all households		EFS Income Support		EFS social housing		MIS	
Household type	**Mean £**	**%**	**Mean £**	**%**	**Mean £**	**%**	**Mean £**	**%**
Single working age	14.37	5.5	11.14	9.1	11.08	7.5	9.00	6.0
Pensioner couple	21.00	5.8	18.15	7.9	14.93	7.0	10.62	5.3
Couple with two children	24.73	4.1	20.20	7.0	17.50	5.0	18.49	5.0
Lone parent with one toddler child	15.90	6.1	13.09	8.1	13.00	7.1	16.43	7.8

Comments

The fuel running costs produced by MIS are mainly driven by the choice of property deemed to be appropriate for each family type according to public consensus. The size of dwelling agreed by the groups was atypical especially for most pensioners and the choice of social housing further reduces the fuel use due to much higher standards of efficiency than those found in other housing sectors. The agreed minimum in housing size had a tendency to be the closest fit to family size whereas typical housing, even for those on low incomes, often includes an extra bedroom. The social housing sector is now much better insulated and has more efficient heating than owner-occupied housing, so using a small, fuel efficient social property to set the standard is always going to give lower running costs than many of those households will actually experience. On the whole, the comparison between actual spending on fuel and the MIS standard confirmed this to be the case.

The fuel component of the budget standard is required to meet a minimum socially acceptable standard as defined by the MIS groups. Underpinning this was the requirement that good health and the condition of the home should not be compromised. The levels originally specified by the task groups did not meet this requirement. However, the checkback groups agreed to include the fuel expert's recommendations in order to establish a suitable minimum standard across all house types and according to household composition. Nevertheless, the MIS estimate is only as good as the availability of the fuels themselves. Some outlying rural areas and villages in Britain do not have access to the gas network. As an indication of cost differentials, to maintain the same level of comfort, DEFRA estimate a typical household would have to spent about 40 per cent more on their total energy use if they used an electric storage heating system rather than gas. The ready reckoner (an interactive web-based tool that can be used to calculate MIS budget standards) is available on the project website[12], and using this it is possible to generate a MIS budget for a household based on variable fuel costs.

In order that MIS remains a useful tool of policy in the future it needs to reflect rising prices in the short term and changing tastes and preferences in the long term. This

[12] www.minimumincomestandard.org

is particularly relevant to fuel costs, which this year are predicted to increase disproportionately compared to previous years, and to other housing costs. The current strategy for updating prices annually is discussed in the MIS Working Paper 2, 'Uprating and Rebasing Minimum Income Standards'.[13]

[13] www.minimumincomestandard.org/downloads/launch/uprating_WP2_20june08.pdf