February 1992

BEST PRACTICE PROGRAMME

13

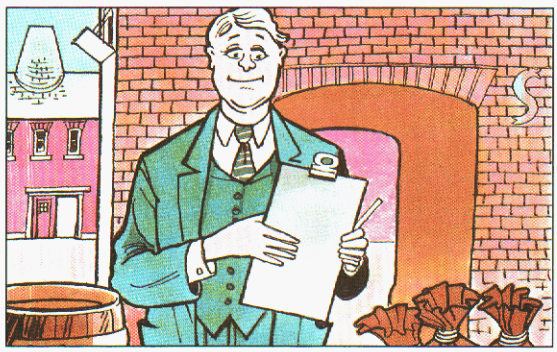
Energy Consumption Guide

Guidance on the benefits of energy efficiency in Public Houses for the . . .

ENERGY EFFICIENCY IN PUBLIC HOUSES

BREWER

- reduced operating costs
- enhanced design solutions
- more attractive and varied design options
- higher profits

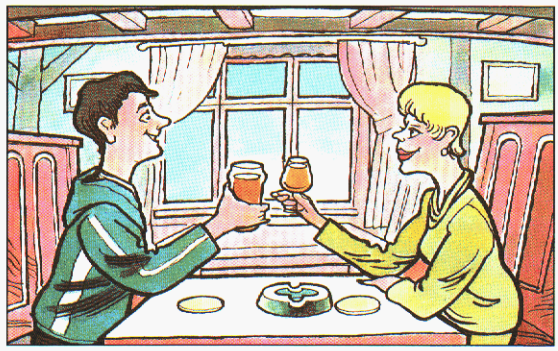


LICENSEE

- higher customer appeal
- more customers
- improved cellar and hot water temperature control
- improved working and living conditions

CUSTOMER

- fewer draughts
- better heating
- cleaner atmosphere



Energy Efficiency Office
DEPARTMENT OF THE ENVIRONMENT

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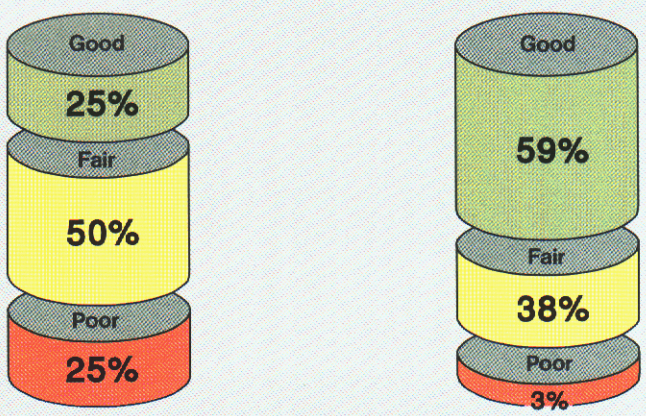
PERFORMANCE YARDSTICKS FOR PUBLIC HOUSES



The proportions of Good, Fair and Poor energy consumption are based on results from the Energy Efficiency Demonstration Scheme Project on Energy Efficient Refurbishment of Public Houses described in Expanded Project Profile 230.

Turnover figures were available for 44 Case Studies.

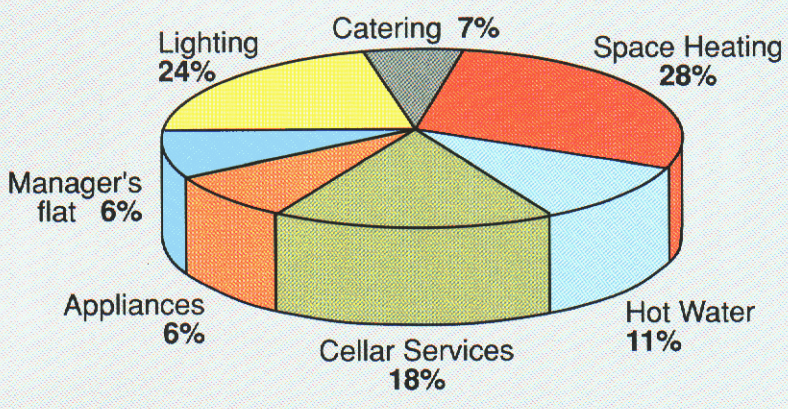
RATING	GOOD	FAIR	POOR
Energy Consumption kWh/m²/£1000 turnover	<2.3	2.3-5.3	>5.3
Energy Cost pence/m²/£1000 turnover	<7.5	7.5-17.0	>17.0

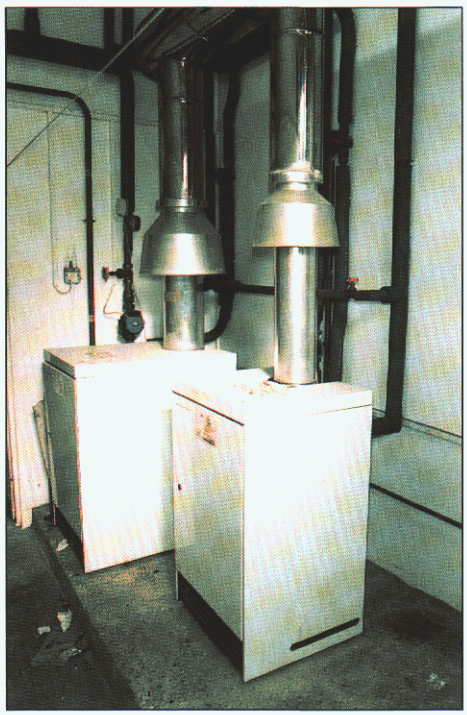
The boundary values for the Categories (2.3 and 5.3 kWh/m²/£1000 turnover) are the lower and upper quartile figures obtained from the distribution of energy consumption before refurbishment. Energy cost boundary values (at 1990 prices) of 7.5 and 17.0 pence/m²/£1000 turnover were derived in a similar way. The ratio of energy consumption between fossil fuel (usually gas) and electricity was, on average, roughly 2:1.

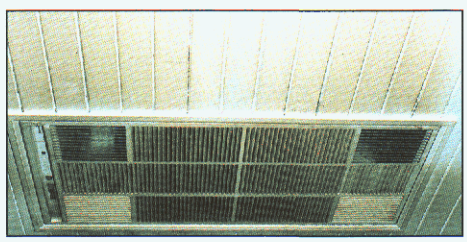
A yardstick for energy efficiency

Public houses are refurbished to increase business. Generally this is accompanied by an increase in energy consumption because of, for example, improved heating and increased catering. These increases can 'eat into' expected profits but, by incorporating energy saving materials and equipment during refurbishment the increase in energy consumption can be minimised, making the public house more energy efficient. This is reflected in percentage reductions in energy use per square metre (m²) and per pound (£) turnover, and can be represented by a simple but effective energy efficiency rating (shown in the diagram above), which combines the effects of floor area and turnover to produce a number graded from Good to Poor, (the lower the rating number, the better the energy efficiency). The rating system is applicable to all types of public house. However, a small number is not a reason for complacency. Often more can be achieved through additional simple measures and staff training in energy management, thus increasing profitability still further. The Good Practice Case Studies illustrate a range of public houses, some of which were Poor before refurbishment, others Fair or Good; most achieved at least a 25% improvement in energy efficiency, as indicated by the rating, and some as much as 70%.

BREAKDOWN OF ENERGY COSTS

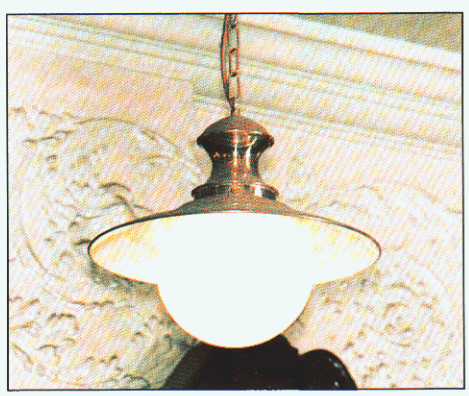






Opportunities for action

The Case Studies of public house refurbishment illustrate that designing them to be energy efficient does not generally incur a high capital over-cost and that this is repaid by energy savings in about two years. After that, savings become an additional profit centre for a public house. The table opposite grades measures and activities according to capital cost.



Point to note

Payback

Too rigid an application of payback as a criterion of cost-effectiveness can sometimes ignore the immediate improvement in comfort conditions which a measure could offer customers, and hence ignore its potential influence on turnover and profitability.

Benefits — the facts

An integrated approach to energy efficient refurbishment specifies the installation of a balanced package of energy efficiency measures and practices as part of the design. It has maximum impact on energy efficiency, leading to improved profitability for the brewer and more comfortable surroundings for customers. A piecemeal or retrofit application of any of these measures, some of which are indicated in the table below, will not result in the best solution, but if a brewer is not undertaking a major refurbishment, a number of items can be installed during routine maintenance operations. These will generally have little impact on decor but would hold the prospect of improved energy efficiency.

Examples of the application of an integrated approach and the results achieved are shown in the EEO's **Good Practice Case Studies** "Energy Efficiency in Public Houses". Detailed applications are set out in the **Good Practice Design Guide.** Both are part of the **Public House Sector File.**

Energy efficient refurbishment offers added benefits, over and above the cost savings and profit improvements associated with energy efficiency.

Benefits of Energy Efficiency serve to:

- **improve customer comfort:** for example, temperature control of separate zones, eg by the use of thermostatic radiator valves, allows each part of the premises to be heated for optimum comfort. When coupled with draughtstripping, this offers customers a consistently heated environment, because the heating system can now respond to the increased heat gains from the occupants, lighting and bar equipment.

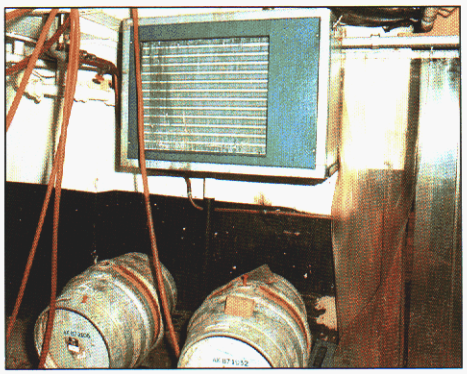
- **overcome a problem:** for example, heat removed from a cooled cellar can be transferred to a heat recovery circuit instead of dumping it to the outside. The recovered heat can be used to heat water (for example, dishwashing).

- **reduce maintenance costs:** for example low-wattage compact fluorescent lamps have a life in-use of 8000 hrs compared with 1000 hrs for a conventional tungsten lamp. Reduced operating and maintenance costs accrue to 'the bottom line' as increased profits.

How savings can be achieved

Savings can be achieved as follows:

- altering the fabric of the building to reduce heat loss eg by adding insulation or double glazing.
- replacing or upgrading building services and installing automatic controls, to make them more efficient.
- changing or modifying energy consuming equipment to make it operate more efficiently or to use a less expensive form of energy.
- encouraging staff to use equipment and controls efficiently. This is usually referred to as 'good housekeeping'.
- operating an effective maintenance programme, including repair and upgrading of equipment as necessary.
- monitoring and targeting of consumption in order to improve performance. This checks that both the plant and controls are operating as intended and provides a basis for continuously improving the energy performance of the premises.
- specifying energy efficient equipment, including low energy lights from the outset.



ENERGY SAVING OPTIONS TO CONSIDER FOR REFURBISHMENT OR MAINTENANCE CYCLES IN PUBLIC HOUSES.

Building Fabric

Improve roof space insulation
Install cavity wall insulation
Fit double glazing
Reduce glazed area
Insulate infill panels
Insulate flat roofs
Fit door closers
Draughtstrip doors & windows
Install draught lobbies
Fit heavy curtains

Boiler Plant

Replace old inefficient boiler
Separate domestic hot water
Improve insulation of boiler & pipework
Implement regular maintenance

Cellar Services

Check position and setting of thermostats
Consider heat recovery and heat pumps to use waste heat for DHW services
Remove freezers from cooled areas

Space Heating

Install zone controls in public areas
Don't heat unused rooms to unnecessary levels. Use frost condensation protection thermostats
Set thermostats correctly
Install tamperproof Thermostatic Radiator Valves (TRV's)
Install optimum start controls
Install Building Energy Management System (BEMS)
Install a weather compensating control
Shut down space heating in summer
Repair water leaks

Domestic Hot Water

Install dedicated water heaters — centrally located or point-of-use heater
Insulate storage tanks and pipework
Remove redundant pipework
Check thermostat settings
Set minimum water temperature 55°C for storage, 45°C at draw-off *
Install spray taps

* *Legionnaires' Disease* Guidance Note EH48 HMSO

Energy Tariffs

Check that tariffs and maximum demand ratings are correct

Lighting

Install compact fluorescent lamps
Install lighting controls in public areas
Clean and maintain lamps
Switch off unnecessary lights

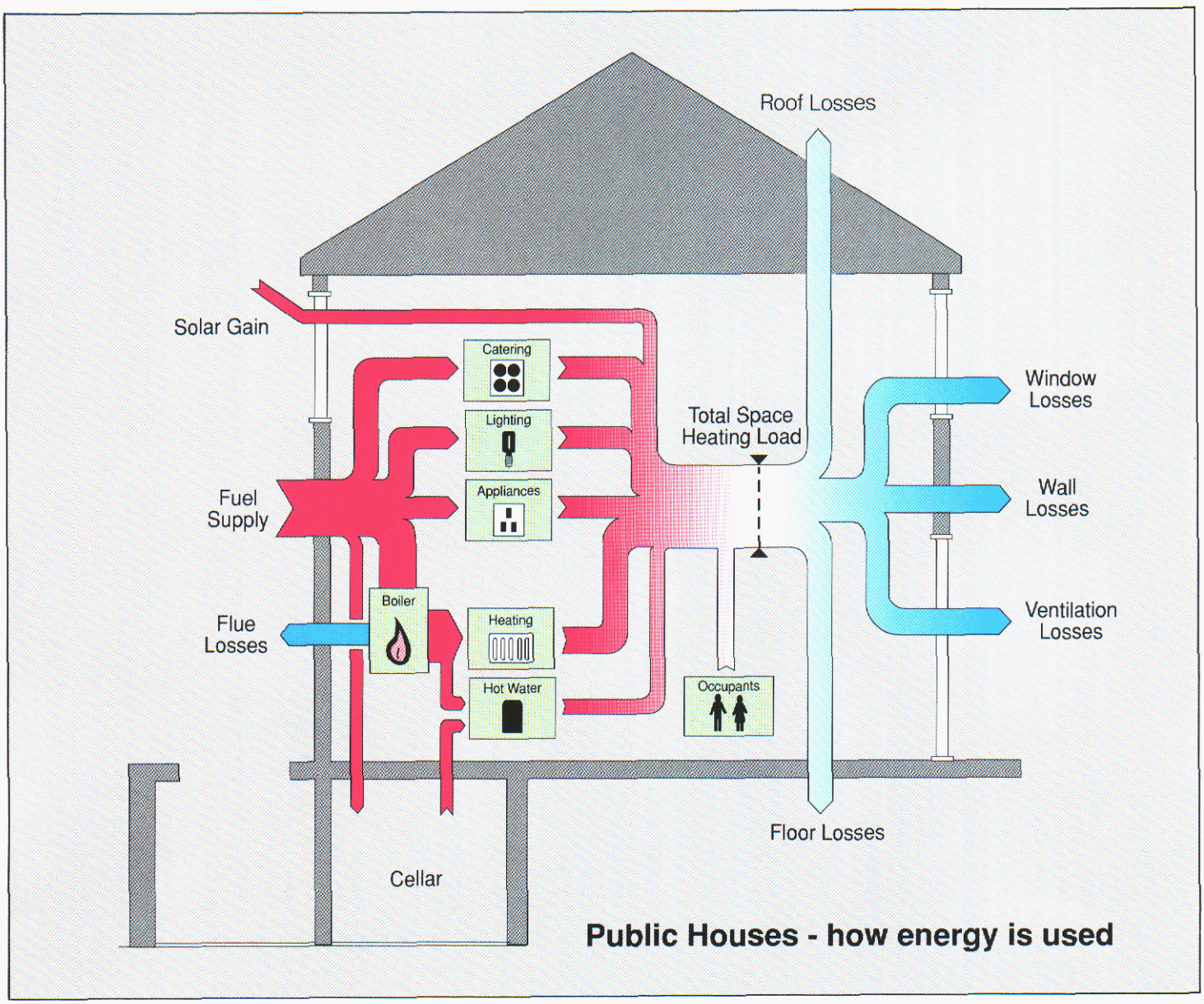
Ventilation

Fit automatic controls to ventilation fans
Install heat recovery devices

Catering

Select energy saving equipment
Clean and maintain equipment regularly
Minimise preheat and switch off before the end of cooking time
Regularly check timers and thermostats
Switch off extract fans when not required
Clean filters, grilles and blades of fans
Site fans correctly
Close external doors when operating fans

FURTHER INFORMATION



Public House Sector File

This Energy Consumption Guide is part of the Best Practice Sector file. The file also contains:

- The Public House Good Practice Design Guide (GPG 15.1 to 15.10), which gives detailed information about energy efficient refurbishment
- Good Practice Case Studies featuring a variety of Public Houses

All prepared by BRECSU on behalf of the Energy Efficiency Office.

Acknowledgements

The co-operation of the Brewers' Society, individual brewers, public house licensees, designers, contractors, and energy consultants is gratefully acknowledged.

ADVICE ON ENERGY MANAGEMENT

Advice on energy management can also be obtained from your Regional Energy Efficiency Office. The telephone numbers are as follows:

Scotland
Tel: 031-244 4665

Wales
Tel: 0222 823126

Northern
Tel: 091-235 7216

Yorkshire & Humberside
Tel: 0532 338285

North West
Tel: 061-838 5330

East Midlands
Tel: 0602 506181

West Midlands
Tel: 021 212 5134

Eastern
Tel: 071 215 0610

South and West
Tel: 0272 272666

South Eastern
Tel: 071 215 0619

Northern Ireland
Tel: 0232 763244

For further information on this or other buildings-related projects, please contact: Enquiries Bureau, Building Research Energy Conservation Support Unit (BRECSU), Building Research Establishment, Garston, Watford WD2 7JR. Tel No. 0923 664258. Fax No. 0923 664097.

For further information on industrial projects, please contact the Energy Efficiency Enquiries Bureau, Energy Technology Support Unit (ETSU), Building 156, Harwell Laboratory, Oxon OX11 0RA. Tel No: 0235 436747. Telex No: 83135. Fax No: 0235 432923.

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