



Annex 6: Software to Support the Implementation of the EPBD *by Roger Hitchin (BRE)*

CONCERTED ACTION

SUPPORTING TRANSPOSITION AND IMPLEMENTATION OF THE DIRECTIVE 2002/91/EC CA – EPBD (2005 – 2007)

21 Member States

Austria, Belgium, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, UK

1 EFTA Country

Norway

1 Accession Country

Bulgaria (MS from 2007)

6 Invited Participants

Lithuania, Romania, Malta, Luxembourg, Croatia, Czech Republic

Editors:

Eduardo Maldonado
Peter Wouters
Aleksander Panek

Core Theme Leaders:

Jens Laustsen (Certification)
Hans van Eck (Training)
Marcello Antinucci (Inspections)
Hans Erhorn (Procedures)

The Concerted Action supporting transposition and implementation of Directive 2002/91/EC of the European Parliament and of the Council (CA EPBD) was funded by the Intelligent Energy Europe Programme (2003-2006) of the European Union.

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Communities or any of the Member States. The European Commission is not responsible for any use that may be made of the information contained therein.

The CA EPBD was supported under the Intelligent Energy - Europe Programme of the European Commission. - The contract was established and managed by the Directorate-General for Energy and Transport.



Published 2008

Intelligent Energy  **Europe**

Table of contents

1.1 Introduction	3
1.2 Software to support Article 3 (to have a methodology)	3
1.3 User training and accreditation	4
1.4 Use for Compliance with Minimum Standards.....	4
1.5 Use for Energy Performance Certification on Construction.....	4
1.6 Use for Energy Performance Certification on Sale or Let.....	4
1.7 Use to Support Public Display Energy Performance Certification	5
1.8 Use to Support Inspection.....	5
1.9 Databases	5
1.10 Commentary	5
APPENDIX TO ANNEX 6	6

1.1 Introduction

The EPBD requires Member States to introduce an integrated calculation procedure for the energy consumption (or carbon emissions) of a building and its servicing systems (Article 3). Member States are required to use this procedure as the basis of minimum energy performance regulations for buildings.

Although the Directive does not explicitly demand it, it is logical to apply the same procedure to the separate requirement for energy performance certification, if this is based on a calculated (asset) rating.

Such integrated calculations are inherently complicated, even when their component parts are simplified, and the use of software is an obvious – though not obligatory way of making it practicably applicable.

Software may also be used to support other parts of the Directive or other options for its implementation. For example, the use of energy performance ratings based on measured energy consumption (“operational ratings”) is likely to be simplified by the application of software. Software might also be used to support the inspection requirements (articles 8 and 9).

For all these potential applications, there are advantages to having central databases of results – another software application.

Thus there are several possible applications of software, although none are mandatory.

This report summarises and comments on the results of a survey carried out in mid-2006 to investigate the extent to which Member States planned to use software and for which purposes. The survey did not explore the technical content of software, though this has been discussed within Concerted Action meetings.

A total of 20 replies was received. In the analysis which follows, the totals sometimes add up to more than 20 because there were multiple replies – for example different replies for dwellings and other buildings. Some respondents were not able to answer all questions, so there are sometimes fewer replies.

The replies are collated in the Annex. The body of the report summarises them – a process which sometimes involves simplifying responses.

It should be stressed that there is no “correct” answer to a survey such as this: different Member States have different needs, reflecting their existing building codes and energy regulation rules.

1.2 Software to support Article 3 (to have a methodology)

Almost all respondents had, or planned to have, software to support the Article 3 methodology. Eight already had software, another eight were in the process of developing it and six more planned to do so. In some cases, software had only (so far) been developed for application to dwellings.

Most respondents (17) intended the software to be used in desktop and laptop computers. Smaller numbers also included handheld computers (6 plus 4 maybe) or internet access (5 plus 2 maybe). In general internet access meant the ability to download the software for local use rather than direct on-line use.

Although the Directive requires there to be a procedure, it does not forbid the use of several procedures. Even if there is only one procedure, there may be several software implementations of it. The most common situation was for several methods to be acceptable (13) but this was often in the context of there being one

recommended method. In this case alternatives may be used in special circumstances.¹ 5 respondents plan to have only a single methodology with competing implementation tools, and 4 to have a single tool.

If multiple tools (or methods) are allowable, the question of accreditation arises: 8 respondents had (or intended to have) such a process.

1.3 User training and accreditation

13 respondents had (or planned to have) formal training schemes for the users of software and 10 go further and have a formal accreditation or licensing scheme.

1.4 Use for Compliance with Minimum Standards

Software implementation of a calculation method may be used for different purposes, the most obvious one being for minimum standards for new buildings. 7 respondents intended the use of software to be mandatory for this purpose: in 13 cases its use would be voluntary.

In the majority of cases (11) it is likely to be integrated into design tools.

1.5 Use for Energy Performance Certification on Construction

Software applied to new buildings on a pass/fail basis for compliance with regulations will not necessarily be able to generate quantified energy performance ratings and slightly fewer respondents (18 instead of 20) planned to use software for this purpose. Of those that did, slightly more (8 rather than 7) intended energy performance software to be mandatory – 10 intended it to be optional.²

1.6 Use for Energy Performance Certification on Sale or Let

Although this category includes the sale of new buildings, the most numerous applications will be to existing buildings where the volume (and quality) of data about the building is likely to be reduced. Almost all respondents intend to use software for this purpose – in 8 cases to make it mandatory, and in 9 optional. In most cases the software will be that used for Article 3 (minimum performance standards), either used directly (7) or with a special interface (5). In 3 cases special software for energy performance certification will be used.

Most (12) respondents intend to include inference rules or default values within the software to cope with the uncertainty resulting from incomplete or possibly unreliable information.

Energy Performance Certificates are required to be accompanied by recommendation for improvements. 13 respondents expected these to be generated by the software.³

¹ Discussion session in Concerted Action meetings have debated the merits and demerits of allowing a free market (which risks competition for the least demanding compliance), a single mandatory method (which may not be universally applicable) or some intermediate system

² It is not clear how ratings will be produced without software - ratings may be generated from measured consumptions, once the building has a history of use

³ This may include the generation of lists of possible recommendations for surveyors to use as checklists

1.7 Use to Support Public Display Energy Performance Certification

Slightly fewer respondents intended to use software to support public display certification. 5 intended software to be mandatory and 9 for it to be optional. 6 intended to use the article 3 software directly and 9 to make it optional. 2 will use special-purpose software.⁴ 9 plan to include inference rules or default values.

Although there is no formal necessity to provide recommendations with public display certificates, 9 respondents intend that the software shall generate such recommendations.

1.8 Use to Support Inspection

Software to support the inspection processes will be rather different in nature to that used for energy certification, and is less prevalent. 2 respondents intend to make it mandatory and 6 optional. In 4 cases these will be special stand-alone tools, and in 3 the software will also perform other functions.

1.9 Databases

The use of databases is expected to be very common. 14 respondents intend to have databases for sale or let certification, 10 for public display certification and 7 for inspection.

1.10 Commentary

The survey did not seek information on the technical content of the software. However, it seems clear from Concerted Action discussions that each Member State has been producing its own procedures. Given the differing situations of each Member State with regard to energy building codes, construction tradition and climate – and the rather high risk of failing to implement on time – this is hardly surprising.⁵

However, notwithstanding that some commonality of approaches is emerging, this will inevitably result in a rather fragmented pattern of methodologies and implementation tools.

For nearly all Member States, the Directive represents a substantial change of approach to building energy regulation – and therefore there is very little experience of the new processes let alone the implementation tools. The CEN standards have been produced with unprecedented speed but without the possibility of practical testing before being applied.

It therefore seems very likely that there will turn out to be some unforeseen implementation difficulties and that, over a period of years, tools and procedures will be improved. There may be some convergence between national tools and procedures, but this seems likely to be a slow process once building designers, operators and purchasers have become familiar with these processes. However, such convergence - however gradual – seems desirable with best practice spreading once it has become recognised. If this is to happen, this (probably slow) process will need lubricating by a repeating process of review and revision.

⁴ These presumably include software to support the use of measured – operational -ratings

⁵ Which is not to say that Member States have not benefited from being able to discuss common problems within the framework of the Concerted Action

Appendix to Annex 6

■ Software in support of Article 3 (to have a methodology)

Status of software	
In use	8 (some only for dwellings)
Under development	8 (some only for dwellings)
Planned	6
Platform	
Desktop	17
Laptop	17
Handheld	6 (plus 4 maybe)
Internet (excluding downloadable tool)	5 (plus 2 maybe)
How many acceptable tools? (some answers refer only to housing)	
Only one	4 (including 1 housing only)
One method, several tools	5 (2 for dwellings only, 1 – probably more - for new buildings only)
Several methods acceptable	13 (but often one recommended. 1 energy performance certification only)
Accreditation system for tools?	8 (including 1 planned 1for labelling only)
User training and accreditation	
Formal training scheme for users?	13 (including 2 probable; 1 occasionally, 1 for labelling method only, 2 with handbooks)
Accreditation or licensing of users?	10 (including 1 voluntary, 2 for labelling method only)

■ Use of Software for compliance with Minimum Standards

Use of Software will be	
Mandatory	7 (1may not be for extensions)
Optional	13 (including 1 only if no measured values)
The Article 3 software will be	
Used directly	13 (including 1 probable)
Used with special interface	4
Not used	0

In 11 cases the compliance software may be integrated into design tools

■ Use of Software for Energy Performance Certification for New Buildings

Use of Software will be	
Mandatory	8 (including 2 “possible” of which 1 only for housing)
Optional	10 (including 2 “possible”)
The Article 3 software will be	
Used directly	10 (including 1 possible)
Used with special interface	6
Not used	0

■ Use of Software for Energy Performance Certification for Sale or Let

Use of Software will be	
Mandatory	8 (including 2 “probable”; 1 not if operational rating is available)
Optional	9 (including 1 possible, 1 only if no measured values)
The Article 3 software will be	
Used directly	7 (including 2 maybe)
Used with special interface	5
Purpose-designed software	3 (including 1 probable)

In 9 cases (including 1 probable) the compliance software will be a stand-alone tool.

■ Use of Software for compliance with Energy Performance Certification for Public Display

Use of Software will be	
Mandatory	5 (including 1 “maybe”)
Optional	9 (including 4 maybe, 1 only if no measured values)
The Article 3 software will be	
Used directly	6 (including 2 maybe)
Used with special interface	3 (including 1 only for Asset Rating)
Purpose-designed software	2 (including 1 maybe)

■ Software features for Energy Performance Certification (extent varies)

Sale or Let	
Inference rules or default values	12 (including 2 maybe; 1 default definitely, inferences optional)
Generation of recommendations	13 (including 2 maybe; 1 optional)
Public Display	
Inference rules or default values	9 (including 4 maybe)
Generation of recommendations	9 (including 4 maybe)

■ Use of software to support Inspection

Use of Software will be	
Mandatory	2 (1 probably, 1 for heating only)
Optional	6 (including 2 possibly)
Software is expected to be	
Specifically for this purpose	4
Combined with other tools	3

■ Expectations for Databases

Central (or Regional) Databases are expected for	
Sale or let certification	14 (includes 1 “advisable”)
Public display certification	10 (includes 1 “advisable”)
Inspection	7 (includes 1 “advisable”)

The CA EPBD was supported under the Intelligent Energy - Europe Programme of the European Commission. - The contract was established and managed by the Directorate-General for Energy and Transport.



Intelligent Energy  Europe