Energy Performance Directive

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UCD

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About Energy Research Group

Since 1975 the Energy Research Group, University College Dublin has earned an international reputation for its expertise in the theory and application of sustainable strategies in the design and construction of buildings. Through participation in EU and nationally supported programmes and its consultancy activities ERG's team of architects and engineers are committed to furthering energy-conscious and environmentally responsible design among the building professions. The group offers a comprehensive range of services to government, private, commercial, research and utility clients.

Education and Training

ERG undertakes a wide range of activities designed to support teaching in undergraduate programmes and assist experienced practitioners who want to increase their skills in the areas of energy-efficient and sustainable design.

Design and Consultancy

ERG's support can help design teams to produce buildings that attain higher standards of energy efficiency and environmental sustainability - integrating renewable energy systems and incorporating the latest in innovative technologies.

Research

The Group's research activities have focused on the use of architectural techniques for the conservation of energy: building form and fabric, solar heating, daylighting and natural ventilation. Integrated design, health and comfort in the indoor environment and the broader environmental impact of materials.

Publishing and Multimedia

ERG is internationally recognised for its well-designed and authoritative books, brochures and newsletters. ERG also publishes information and resource material on video, interactive CD-ROM and World Wide Web. Target audiences include planners, architects, engineers and other members of the building design team, as well as researchers, students and policymakers.

Energy Performance Directive

- Directive 2002 / 91 / EC dated 16 December 2002 was passed by the European Parliament on 4 January 2003
- Known as the EPD it requires ***all buildings*** to have a current Energy Performance Certificate available when a building is built, sold, rented or has a major renovation
- Intention is to trigger competitive market forces to improve the energy efficiency of all buildings

Energy Performance Directive

- The objective of this Directive is to promote the improvement of the ***energy performance of buildings within the Community***, taking into account outdoor climatic and local conditions, as well as indoor climate requirements and cost-effectiveness.

- This Directive lays down requirements regarding:

- (a) the general framework for a methodology of calculation of the integrated energy performance of buildings;

Energy Performance Directive

- (b) the application of minimum requirements on the energy performance of new buildings;
- (c) the application of minimum requirements on the energy performance of large existing buildings that are subject to major renovation;
- ***(d) energy certification of buildings;*** and
- (e) regular inspection of boilers and of air-conditioning systems in buildings and in addition an assessment of the heating installation in which the boilers are more than 15 years old.

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Main Points - EPD Certificates

- When buildings are constructed, sold or rented an energy performance certificate is made available by the owner to the prospective purchaser or tenant…the validity of the certificate shall not exceed 10 years.
- Must be accompanied by recommendations for the cost-effective improvement of the energy performance
- Buildings larger than 1000 m2 frequently visited by the public must display the certificate in a prominent place clearly visible to the public.

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Benefits to Building Owners

INCENTIVES

- Better indoor environmental quality with improved working conditions, productivity
- Satisfy Health and Safety issues
- Save energy and save money
- Satisfy company policy
- Public Relations
- Market forces – remain competitive
- Design better buildings

MANDATORY

- Full EPD implementation between 2006 and 2008

Energy Performance Directive

10) The energy performance of buildings should be calculated on the basis of a ***methodology***, which may be differentiated at ***regional*** level, that includes, in addition to thermal insulation other factors that play an increasingly important role such as heating and air-conditioning installations, application of ***renewable energy sources*** and ***design of the building***. A ***common approach*** to this process, carried out by qualified and/or ***accredited experts***, whose independence is to be guaranteed on the basis of objective criteria, will contribute to a level playing field as regards efforts made in Member States to ***energy saving*** in the buildings sector and will introduce ***transparency*** for ***prospective owners or users*** with regard to the ***energy performance*** in the Community property market.

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The vicious circle of blame

Occupiers
"We would like to have environmentally efficient buildings to fulfil our corporate policy commitments."

Constructors
"We can build environmentally efficient buildings, but the developers don't ask for them."

Developers
"We would ask for environmentally efficient buildings, but the investors won't pay for them."

Investors
"We would fund environmentally efficient buildings, but there is no demand for them."

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EuroProsper

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European Partners in €P

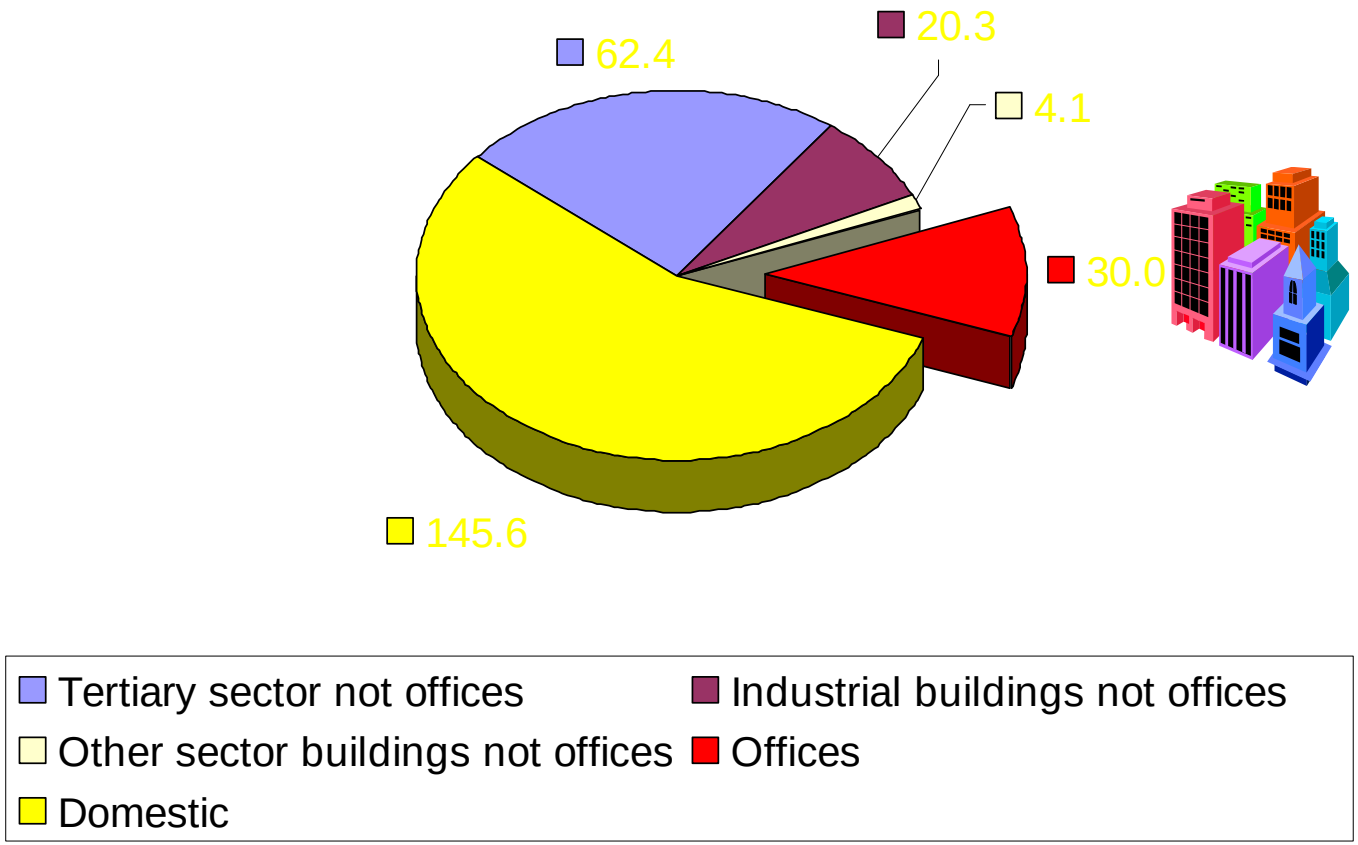
- Energy for Sustainable Development – UK Co-ordinator
- Esbensen (Denmark) - leading HVAC and energy consultancy
- IASA Athens University (Greece) - Southern Europe perspective
- DHV (Netherlands) - leading Dutch consultant engineers
- CIT (Sweden) - building energy experts working closely with key Institutions
- BBRI (Belgium) - liaison with ENPER-TEBUC

Irish Industry Steering Group

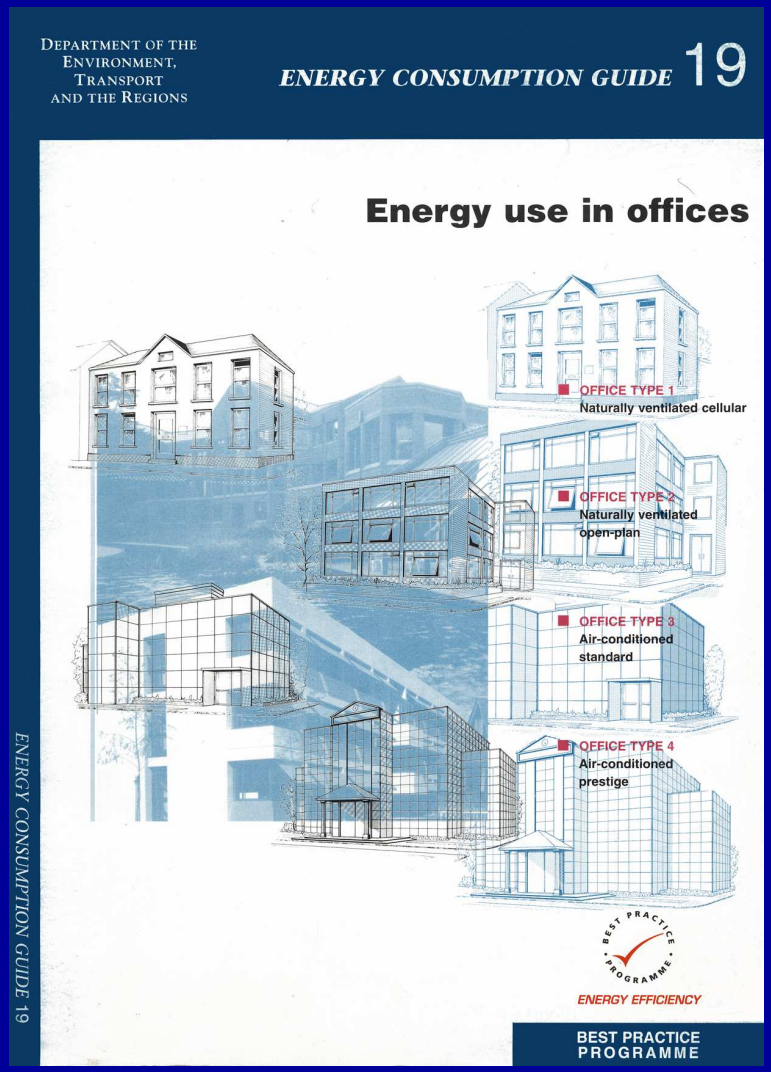
- ISG objective is to inform the Europrosper Project so that the EP Method is relevant and usable in Ireland
- When completed the EP Method will be *available* to all EU Member States to implement the EPD by adapting it to suit national conditions
- The on-line training course will be based in UCD using the '*Blackboard*' course management software
- Irish ISG will be first trial users of the training course in summer 2003

Building Related CO_2 Emissions

Total CO2 Emissions from all Buildings 262.5 $MtCO_2$



Europrosper Methodology



- Develops from extensive experience of energy audits, benchmarking and certification programmes in EU
- Iconic office building benchmarks for most buildings
- Tailored Benchmarking for larger and complex buildings

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Minimum Inputs

1. Name of building
2. Floor Area
3. Number of floors (volume indicator)
4. Annual electricity supply - € or kWhr
5. Annual fossil fuel supply - € or kWhr
6. Days / hours of use
7. Energy features - mechanical ventilation
   - catering
   - air conditioning
   - other notable

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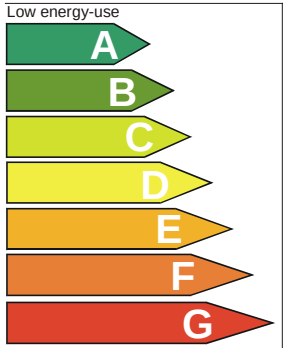
Energy Certificate

According to the directive 2002/91/EC of the European Parliament and of the Council of the European Union, the energy performance of this building is evaluated. The energy performance is determined and this building is found very energy-efficient.

Energy



B

Actual normalised energy performance kg CO_2 / Gross floor area	62

Directive 2002/94/EC

Certification organisation
Street
PO box
City
Tel

Building name
Organisation
Street
City

MAP OF EUROPROSPER CORE SOFTWARE

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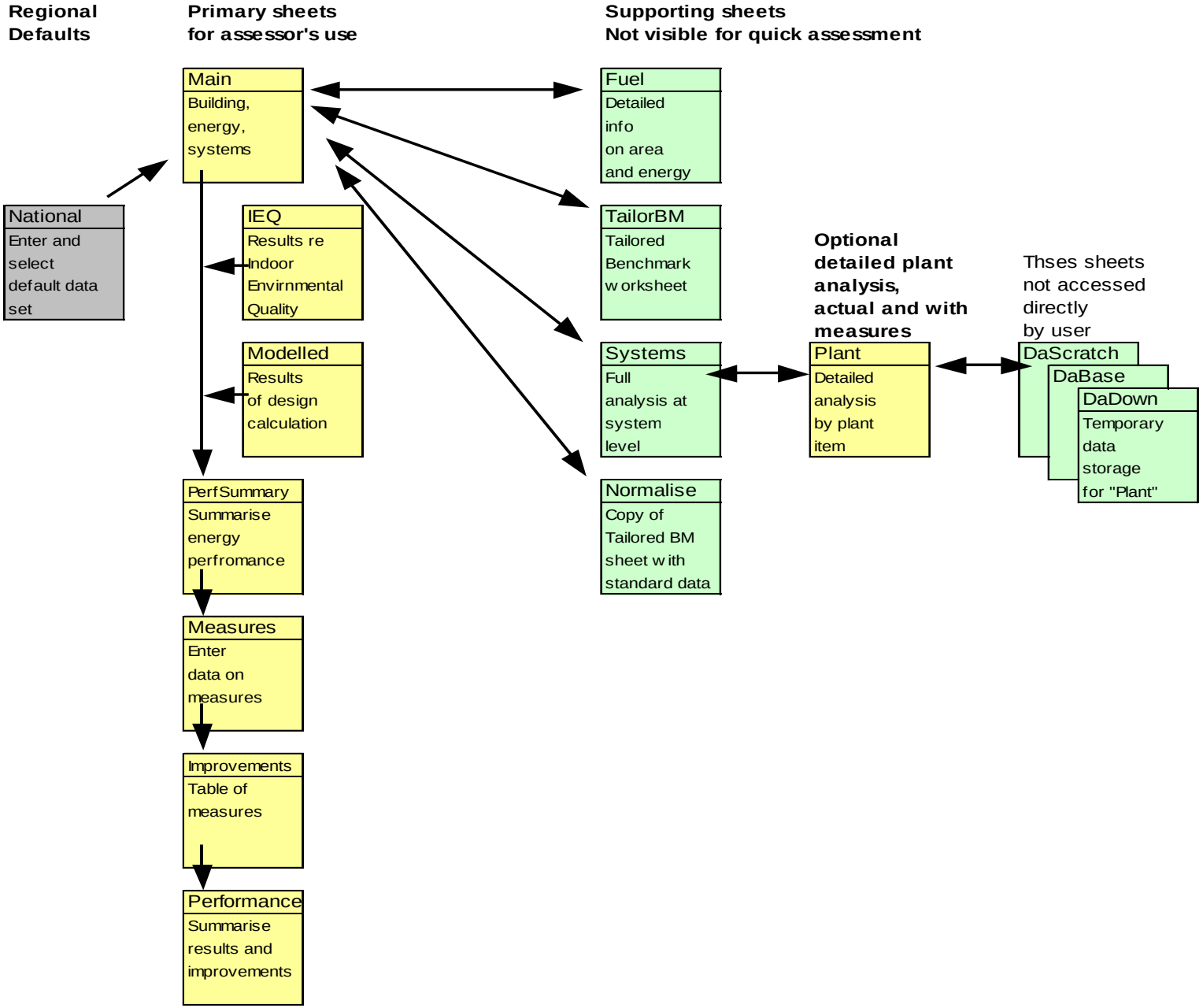


Regional variations

- Main national/regional data sets on “National” sheet
  - Currency, tax, floor area type
  - CO2 and primary energy default factors
  - Tailored Benchmark parameters
    - For lighting, ventilation etc... all systems
- Energy saving measures data
  - Currently the measures sheet needs to be edited for each country
  - List of measures - and for each measure:
    - Percent savings on power or hours of relevant system
    - Default simple payback period
    - Percent presence to get Typical and GP benchmarks

Main Worksheet

MAIN BUILDING AND ENERGY DATA
Data entry in yellow cells only

1. National default set name		EuroProsper	Select appropriate set on National sheet before starting

2. Building identification and floor area:

Building name	free text	Example building
Building floor area type	(1 or 2)	1
Building floor area description		NLA
Building floor area value	m2	3,005
Multiplier to get NLA floor area		1.000
Building floor area NLA	m2	3,005
Number of floors		4

3. Additional size parameter:

Description	free text	Number of occupants
Unit	free text	person
Value		260

4. Annual energy supply:

Select fuel/supply type - see table	(1-8)	1	6		
Fuel		Gas	Electricity		
Supply type		Standard	Grid		
Supply description (optional)	free text				
Annual energy supplied	kWh	1,059,000	1,221,000		
Number of days of this supply		361	364		
Annual energy cost	€	11,760	63,490		
Includes TVA at rate	%	17.5%	17.5%		

Step by Step Certification Procedure

Stage	Procedure	Level 2 Process	Level 3 Process
1	Collect building and energy data, using input conventions	Done by occupier	Done by surveyor
2	Process the building and energy performance data	Auto in software	Auto in software
3	Produce energy performance results	Auto in software	Auto in software
4	Collect data on energy features and measures	Tick-box form	Walk-through survey
5	Assess improvement potential and the effect of measures	Auto in software	Energy systems analysis - Tree Diagrams
6	Provide certificate of performance and measures	Auto in software	Auto in software
7	Provide follow-up plan and monitoring structure	Auto in software	Add input from surveyor

	B	C	D	E	F	G	H	I	J	K
20	**4. Annual energy supply:**							Fuel/supply type options		
21	Select fuel/supply type - see table	(1-8)	1	6						
22	Fuel		Gas	Electricity				1	Gas	Standard
23	Supply type		Standard	Grid				2	Liquid	Standard
24	Supply description (optional)	free text						3	Solid	Standard
25	Annual energy supplied	kWh	1,059,000	1,221,000				4	Thermal	Renewable
26	Number of days of this supply		361	364				5	Thermal	Communal
27	Annual energy cost	€	11,760	63,490				6	Electricity	Grid
28	Includes TVA at rate	%	17.5%	17.5%				7	Electricity	Renewable
29	Carbon dioxide factors if known	kgC/kWh						8	Electricity	Communal
30	Carbon dioxide factors used	kgC/kWh	0.0520	0.1130						
31	Primary energy factors if known	MJ/kWh								
32	Primary factors used	MJ/kWh	3.780	8.640						
33	Percent of this fuel used for heating	%	100%	0%						
34	Weather-dependent percent of this	%	80%	100%						
35	Annual heating degree days	DegCDays	2,234							
36	CHP-generated electricity	kWh	0							

4. Annual Energy Supply

21 D # Select fuel/supply type from table in column I and rows 22 and 23 will automatically be completed.

24 D Optional supply description if energy supply source not listed in default table.

25 D Insert annual energy supplied in kWh. - *QA

This is ***critical information** and the source of the information must be submitted for Data Quality and Quality Assurance. ## Ideally this should come from the **energy suppliers' invoices** for a complete 12 month period. If the figures are calculated the methodology needs to be stated.
If the figures are estimated the method and assumptions by which they were estimated needs to be submitted with the assessment.
Submit copies of the invoices for all energy supplied to the building with the assessment or other evidence of the annual energy supply.

26 D Insert the number of days per year the annual energy supply data given in **25D** covers.
This is important as the dates of invoices do not always cover an exact calendar year. There may be invoices for more than 365 days or less then 365 days and this needs to be stated. The software will take account of the number of days in its calculations on a pro rata basis.
It is an obvious minimum requirement of this Method that the assessment is based on annual data so that it covers all the seasons and conditions under which the building is using energy. If you do not have annual data do not proceed with the assessment.

27 D Insert the annual energy cost for each fuel / supply type.
This information should come from the energy suppliers' invoices used in 25 D.
If the cost is estimated or calculated you need to submit the unit cost used.

28 Insert your local value added tax rate.

	B	C	D	E	F	G	H	I
38	**5. Office floor space use**		Cellular	Open	Call	Dealing	Circulation	Total
39			offices	plan	centre	room	support	
40	**5.1 Percentage of total NLA floor area:**							
41	Naturally ventilated (NV)	% area						
42	Air conditioned (AC)	% area	25%	50%			25%	100%
43	Mixed mode (MM)	% area						
44	Total		25%	50%			25%	100%
45	**5.2 Workstations:**							
46	Number of workstations in area	number	30	60				90
47	Floor area per workstation	m2	25.0	25.0				33.4
48	Default value	m2	16.0	13.0	6.0	8.0	17.0	14.5
49	**5.3 Weekday use:**							
50	Flexitime?	(Y/N/D)	y	y				
51	Late working?	(Y/N/D)	y	y				
52	Multishift?	(Y/N/D)						
53	Total shift hours per day	hours/day						
54	**5.4 Weekend use:**							
55	Saturday hours	hours/day	8	8				
56	Saturday occupancy	%	80%	80%				
57	Sunday hours	hours/day	7	7				
58	Sunday occupancy	%	60%	60%				

	B	C	D	E	F	G	H	I	J	K
115	**10. Copy of the above table showing benchmarks**									
116		**Annual energy use (kWh/m2 NLA)**			**Electrical power density (W/m2 NLA)**			**Full load hours (hours/yr)**		
117		Used	Good	Typical	Used	Good	Typical	Used	Good	Typical
118	**Electricity:**		Practice			Practice			Practice	
119	Heating & hot water	9.1	5.0	7.5	1.7	1.3	1.6	5,271	3,987	4,784
120	Refrigeration	56.2	24.0	46.3	72.9	48.0	66.1	771	500	700
121	Fans	60.0	25.9	56.2	12.1	8.0	11.7	4,944	3,243	4,784
122	Pumps etc	32.0	7.9	24.2	8.0	3.2	6.1	4,000	2,500	4,000
123	Control systems	2.4	2.0	2.0	0.3	0.2	0.2	8,760	8,760	8,760
124	Humidification	40.0	16.5	32.9	26.6	27.4	27.4	1,500	600	1,200
125	Lighting (interior)	76.1	38.3	62.7	16.0	15.0	18.8	4,754	2,554	3,342
126	Office equipment	23.0	14.3	19.0	5.9	4.5	5.4	3,880	3,176	3,522
127	Other normal e.g. vending lifts	20.4	12.5	16.8	9.9	7.9	9.0	2,059	1,575	1,869
128	Machine rooms	68.7	56.6	56.6	7.8	6.5	6.5	8,760	8,760	8,760
129	Other special e.g. catering, car park	19.7	12.6	16.2	10.5	7.6	9.5	1,873	1,653	1,700
130	Total electricity	407.4	215.5	340.3	171.8	129.6	162.3	2,372	1,663	2,097
131		0.0								
132	**Fossil:**	0.0								
133	Heating & hot water	364.7	147.9	267.1	65.2	44.7	55.8	5,591	3,311	4,784
134	Humidification	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
135	Other special e.g. catering	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
136	Total fossil	364.7	147.9	267.1	65.2	44.7	55.8	5,591	3,311	4,784

Internal Environment Quality

Details of respondent

Responsibility level
- [ ] Office room/floor
- [ ] Local
- [ ] Regional
- [ ] National

Role within building
- [ ] Technical/clerical
- [ ] Maintenance/building services
- [ ] Facilities management
- [ ] Property management
- [ ] Line management

Proportion of time in building
- [ ] More than 60%
- [ ] 40% to 60%
- [ ] 20% to 40%
- [ ] Less than 20%

Length of time in building
- [ ] Less than 6 months
- [ ] 6 months to 1 year
- [ ] 1 year to 2 years
- [ ] More than 2 years

Role title

Respondent's description of conditions

High room temperatures
- [ ] Never
- [ ] Occasionally in some high use areas
- [ ] Generally in high use areas
- [ ] Occasionally in hot weather
- [ ] Generally in hot weather
- [ ] Generally through the year

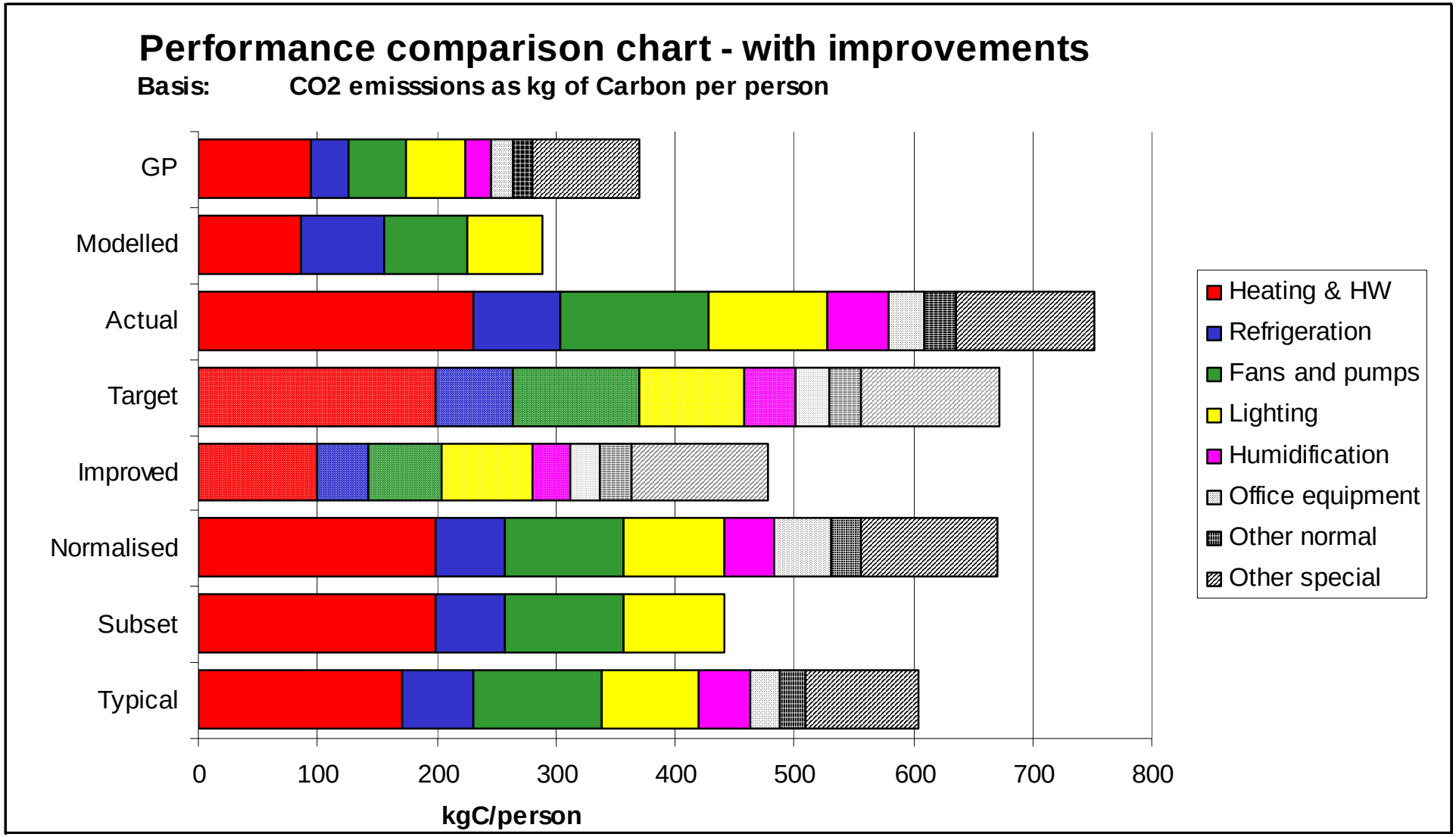
Comment

Low room temperatures
- [ ] Never
- [ ] Occasionally in some exposed areas
- [ ] Generally in some areas
- [ ] Occasionally in very cold weather
- [ ] Generally in cold weather
- [ ] Generally through the year

Comment

Air quality problems
- [ ] No problems
- [ ] Generally acceptable but with occasional stuffiness
- [ ] Normal problems in selected areas (print rooms etc.)
- [ ] General problem

Comment


Performance comparison chart - with improvements
Basis: CO2 emisssions as kg of Carbon per person
GP
Modelled
Actual
Target
Improved
Normalised
Subset
Typical
0
100
200
300
400
500
600
700
800
kgC/person
Heating & HW
Refrigeration
Fans and pumps
Lighting
Humidification
Office equipment
Other normal
Other special

Improvements sheet This is an ordered and filtered version of the Measures sheet results - to use filters see below.

	Measure	Estimated annual saving Cost saving (€/yr)	Elec saving (kWh)	Fossil saving (kWh)	CO2 saving (kg C)	Guide capital cost (€)	Payback period (years)	Measure reference number	[not printed] Category
8	Change to normal low use plant schedules	2,03	35,80	47,00			1.0	15	
9	Use zoning controls	620	10,900	14,800	0	0	1.1	17	2
10	Hold off boilers in summer	650	4,000	49,800	0	0	2.1	18	2
14	Procedures for use of thermostats	900	13,100	34,000	0	0	0.0	35	3
14	Change to moderate humidity settings	1,040	23,500	0	0	0	0.0	40	2
14	Commission and operate VSDs	720	16,300	0	0	400	0.0	22	3
14	Commission lighting controls	490	11,200	0	0	500	0.0	10	3
14	Prevent cooling with heating	870	12,700	32,400	0	900	0.0	36	3
14	Sequence and trim boilers	470	1,400	43,500	0	500	0.0	29	2
14	Install presence controls	530	11,900	0	0	1,100	0.0	5	2
14	Install extra zoning controls	640	11,200	15,000	0	1,900	0.0	16	2
14	Replace inefficient fans	1,540	34,800	0	0	4,600	0.0	49	2
14	Install VSDs on fans	500	11,300	0	0	1,500	0.0	21	3
14	Replace inefficient boilers	1,380	3,200	131,000	0	5,500	0.0	28	2
	Total	**12,380**	**201,300**	**367,500**	**41,860**	**16,900**	**0.0**		
	Savings as percent of total	0%	0%	0%	0%				
	Not-printed summary of savings from all measures								
	Savings from all measures	20,642	339,800	592,976	0	43,800	0.0		
	Savings from all measures as percent of total	0%	0%	0%	0%				

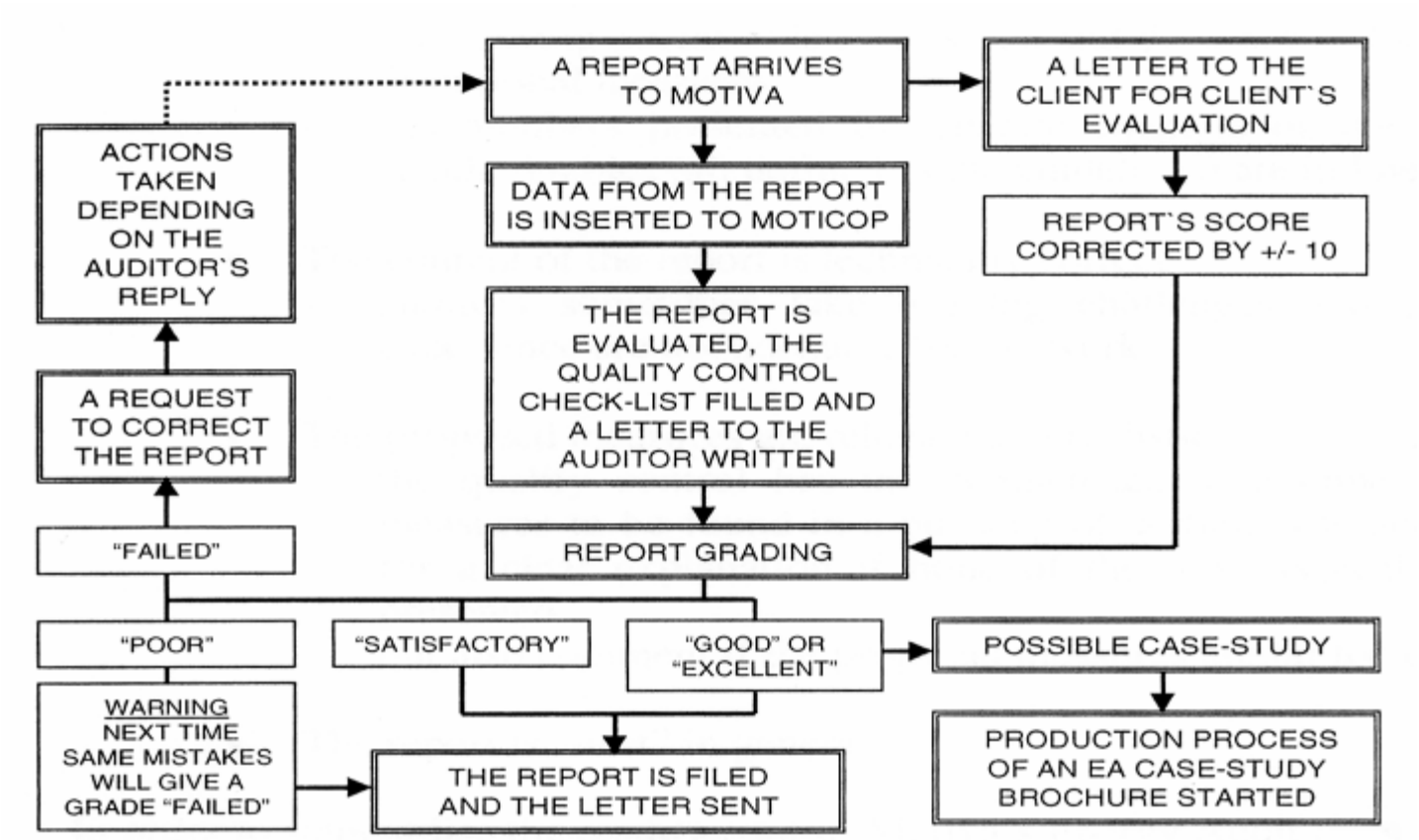
Using Filters:

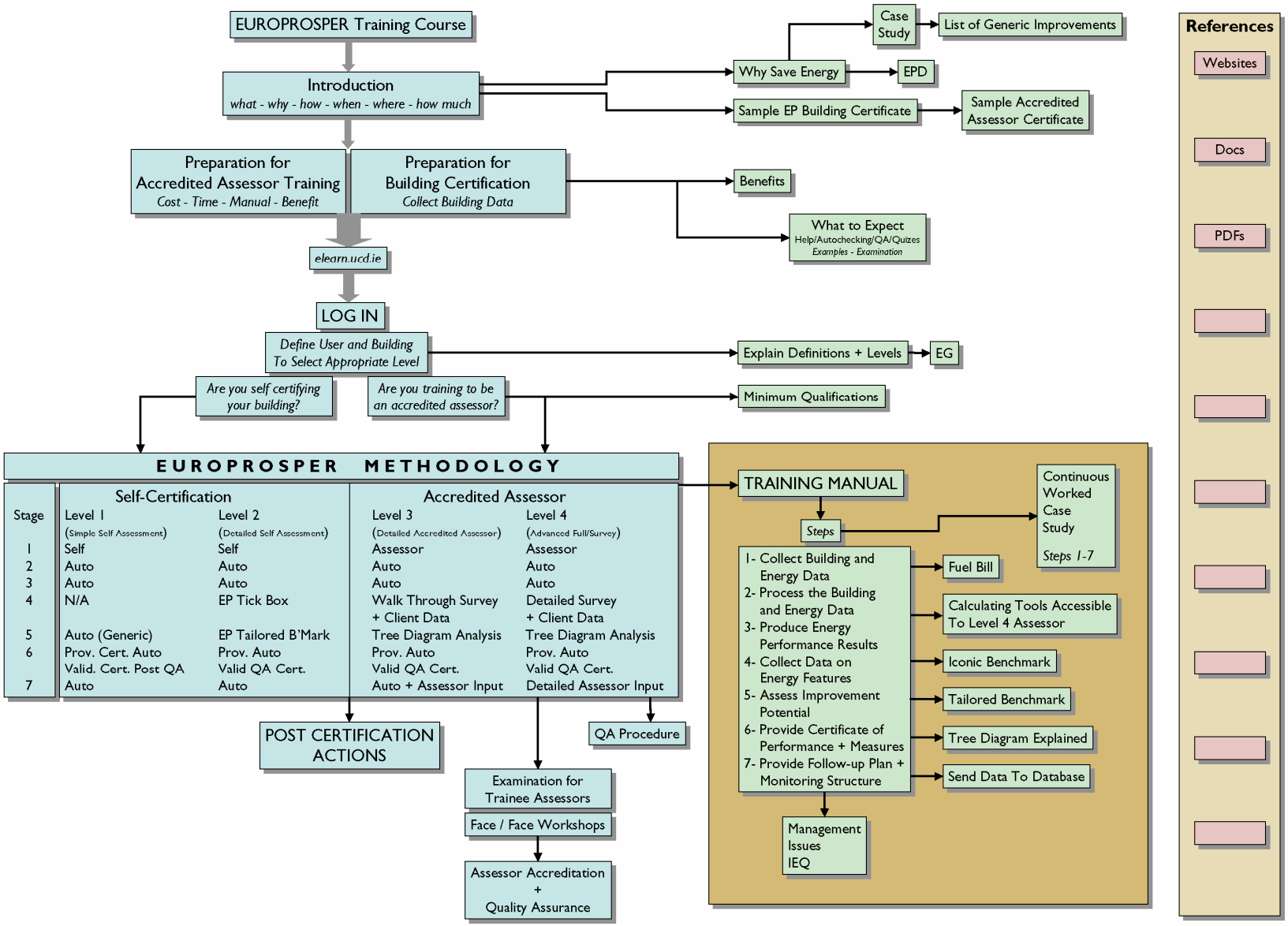
1. Filters allow rows (measures) to be hidden automatically if they do not fit your criteria. If active, filter menu arrows should appear in row 8 (if not see 3 below).
2. Setting filter criteria example: click filter menu arrow in Cost Saving column. Select Custom. Select "is greater than". Type 300. Select OK. (Repeat if required for other columns).
3. To activate filters using standard Excel menus: click on any cell in the table, then Data... Filter... Autofilter. Filter menu arrows should appear on each column.
4. To de-activate filters using standard Excel menus: Data... Filter... Autofilter.
5. After re-activating the filters you need to set the criteria (as 2 above) to hide unwanted measures - these are excluded from totals.
6. To re-order this table or make changes to rows/columns, you need to de-activate the filters first.

Fuel factors:

Electricity CO2 factor (kgC/kWh)	0.113
Fossil CO2 factor (kgC/kWh)	0.052

Quality Assurance




EUROPROSPER Training Course
Introduction
what - why - how - when - where - how much
Why Save Energy
Case Study
List of Generic Improvements
EPD
Sample EP Building Certificate
Sample Accredited Assessor Certificate
Preparation for Accredited Assessor Training
Cost - Time - Manual - Benefit
Preparation for Building Certification
Collect Building Data
Benefits
What to Expect
Help/Autochecking/QA/Quizes
Examples - Examination
elearn.ucd.ie
LOG IN
Define User and Building To Select Appropriate Level
Explain Definitions + Levels
EG
Are you self certifying your building?
Are you training to be an accredited assessor?
Minimum Qualifications
EUROPROSPER METHODOLOGY
Stage
Self-Certification
Level 1 (Simple Self Assessment)
Level 2 (Detailed Self Assessment)
Accredited Assessor
Level 3 (Detailed Accredited Assessor)
Level 4 (Advanced Full/Survey)
1 Self Self Assessor Assessor
2 Auto Auto Auto Auto
3 Auto Auto Auto Auto
4 N/A EP Tick Box Walk Through Survey + Client Data Detailed Survey + Client Data
5 Auto (Generic) EP Tailored B'Mark Tree Diagram Analysis Tree Diagram Analysis
6 Prov. Cert. Auto Prov. Auto Prov. Auto Prov. Auto
Valid. Cert. Post QA Valid QA Cert. Valid QA Cert. Valid QA Cert.
7 Auto Auto Auto + Assessor Input Detailed Assessor Input
POST CERTIFICATION ACTIONS
Examination for Trainee Assessors
Face / Face Workshops
Assessor Accreditation + Quality Assurance
QA Procedure
TRAINING MANUAL
Steps
Continuous Worked Case Study
Steps 1-7
1- Collect Building and Energy Data
2- Process the Building and Energy Data
3- Produce Energy Performance Results
4- Collect Data on Energy Features
5- Assess Improvement Potential
6- Provide Certificate of Performance + Measures
7- Provide Follow-up Plan + Monitoring Structure
Fuel Bill
Calculating Tools Accessible To Level 4 Assessor
Iconic Benchmark
Tailored Benchmark
Tree Diagram Explained
Send Data To Database
Management Issues IEQ
References
Websites
Docs
PDFs

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Course Information

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Overview

Training Course for Users of the Europrosper Building Energy Performance Certification Framework

Introduction

The **objective** of this course is to train people in the use of the **Europrosper Certification Framework** to assess the energy performance and internal environment qualities of office buildings as will be required by the European Union's **Energy Performance Directive** (EPD).

Simple and small buildings may be **Self-Certified** by the building owner or occupier but larger and complex buildings will be certified by an **Accredited Assessor**, typically someone with an engineering background. This course is for both situations and includes an examination of the course content at the end. The examination is mandatory to become an Accredited Assessor and voluntary for Self-Certification. At the end of the course successful students will be able to assess the energy performance of buildings and be qualified to issue **Energy Performance Certificates** in accordance with the Energy Performance Directive.

The course is designed to be a ***student centred problem solving e-learning environment*** which enables students to move through the course to suit their own knowledge, experience and requirements. There are links to relevant websites, further commentary and explanation to assist you along the way and there is a **Course Map** to help you navigate your way around the course content. Optional quizzes at critical stages provide opportunities for feedback, self monitoring and self assessment.

There is a **Discussion Board** and a **Virtual Classroom** for you to interact with others involved in the course and to provide feedback to the Course Organisers via the **Course Survey**. Please log in and follow the instructions contained in each section.

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QUIZ

1. Is reducing the total electricity consumption of an office building:

- [ ] a) the objective above all other considerations?
- [ ] b) the objective equal to standards of internal qualities of IAQ and natural light?
- [x] c) the objective subject to achieving minimum standards of internal qualities of IAQ and natural light?

2. What is IAQ?

- [ ] a) internal audit qualities
- [ ] b) indoor average quantities
- [x] c) indoor air quality

3. What is the definition of Installed fan power Density?:

- [x] a) (l/s)/m2 x W/(l/s) = W/m2
- [ ] b) kWh/m2 x l/s(m2) = W(l/s)

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An Leabharlann
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Check Grade

User Information

Average Points/Assessment:	N/A
Assessment Average:	N/A
Total Points:	0

Scores

Date Added	Item Sort items by: Item Order Date Added Name Type	Score	Points Possible	Weight	Class Avg.
Sep 7, 2002	Building Definitions (Survey)	✔	0	%	N/A

✔ Completed
In Progress
- No Information
! Needs Grading
? Grading Error

OK

Europrosper Methodology

- Experience of other countries incorporated into Europrosper methodology
- Rigorous method based on 25 years of research and experience in energy auditing
- Methodology designed to be modified to suit national requirements
- Focus on *improvement measures* based on energy history, not the label
- Europrosper an ‘off the shelf’ option
- On-line e-learning training package

Cullen sees carbon taxes as way to cut emissions

By Frank McDonald, Environment Editor

THE Government must "bite the bullet" on carbon taxes to avoid hundreds of millions of euro in fines for breaching the Kyoto Protocol on Climate Change, according to the Minister for the Environment, Mr Cullen.

Speaking on the publication by the Environmental Protection Agency of a major report on the effects of climate change here, he said a carrot-and-stick approach was needed to encourage industry to switch to cleaner fuels.

Mr Cullen said he believed there was every reason to consider eco-taxes with the budgetary situation the way it was.

However, it is known that such a move has been resisted for the past five years by senior officials from the Department of Finance on competitiveness grounds.

It has also emerged that the Tánaiste and Minister for Enterprise and Employment, Ms Harney, a former minister of State at the Department of the Environ-

fuels because of fears about the impact on industry.

But Mr Cullen said Ireland's emissions of greenhouse gases, at 17.7 tonnes per person per year, meant that real reductions would have to be made to meet the Kyoto target of capping the increase in emissions at 13 per cent above 1990 levels by 2010.

He contrasted Ireland's emissions with an average of 13 tonnes per capita in developed countries in general, 10 tonnes per capita in the EU and just two tonnes per capita in the developing world which would, ironically, suffer most from climate change.

Emphasising that he was "firmly committed" to bringing forward carbon taxes, the Minister said there was no reason why Irish industry could not switch from burning the dirtiest fossil fuels, coal and oil, to cleaner alternatives such as natural gas.

He also put it on the record that he was a strong supporter of wind energy and felt it had a great future in Ireland because of its relatively exposed position.

rent level of objections to wind farms," he declared.

"Time is not on our side", Mr Cullen said.

"Our emissions are way ahead of our EU counterparts, and unless we bring this ludicrous situation into line we will pay a horrendous price" (in terms of penalties for not meeting Kyoto Protocol targets).

He described the EPA report, *Climate Change: Indicators for Ireland*, as a "timely publication, given the weather in the past few weeks and the havoc wreaked by the levels of rainfall we have experienced", which he attributed to climate change.

This was the most significant and threatening global environmental problem, which would require cuts of up to 60 per cent in greenhouse gas emissions this century.

"There is no good in putting targets in place and not doing all we can to meet them," he said.

Asked how he could reconcile this with a 22 per cent cut in the allocation for forestry — a recog-

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Positive Approach

- Engage with the building industry
- Demonstrate benefits
- Why build the worst possible buildings allowed by legislation
- Workmanship issues
- *Minergie* in Switzerland
- EPD opportunity

Added Value = Added Profit

- Typical house energy costs € 1000 pa
- Invest extra €2500 in insulation to reduce energy costs by 20% or €200
- House generates for owner €200 pa relative to typical
- €200 pa = investment of €13,333 @ 1.5% term deposit
- Developer charges €5000 more @ 3.7% = €185 mortgage
- Owner nets €15 pa = €1,000 investment @ 1.5%
- Bank allows higher pre-arranged mortgage due to purchaser having more disposable income and higher value of house *

- Developer has a unique marketing strategy -€ ??
- *Developer makes €2,500 more profit per dwelling.*

House of Tomorrow

- Typical house energy costs € 1000 pa
- Invest extra €10,000 (€9644) in construction to reduce energy costs by 50% (67%) or €500
- €500 pa = investment of €30,000 @ 1.5% term deposit
- ***House of Tomorrow grant of € 5000 applies***
- Developer charges €10,000 more @ 3.7% = €370 mortgage
- Owner nets €130 pa = €8,667 investment @ 1.5%
- Bank allows higher pre-arranged mortgage *

- Developer has a unique marketing strategy
- *Developer makes €5000 more profit per dwelling.*

Energy Performance Directive

- Must be implemented in 2006 or 2009 to comply
- Training of significant numbers of Accredited Assessors necessary
- Cost of training and assessments an issue
- Quality Assurance issues critical to success
- Will require a national administration system
- Many decisions to be made by Irish government

Focus must remain on continuous improvement in energy efficiency of buildings.