

Low Carbon Consultant / Building Design (EPC)

Pre-requisites & Pre-course Reading

This is a course designed for those wishing to become Low Carbon Consultants and also those who want to gain accreditation as Low Carbon Energy Assessors able to produce Energy Performance Certificates.

This document sets out reading and preparation that is required of candidates in advance of joining the two day training course for the production of Energy Performance Certificates and the Low Carbon Consultants Design Training.

You are strongly advised that this preparation should be taken seriously. The required reading will be referred to and expanded upon during the training and you should have a thorough knowledge of the documents in advance in order to gain further knowledge in their application. The examination will feature some questions on the content of these documents.

There is a set of questions at the end of this document entitled 'Routemap' These should guide you to some of the relevant sections of the essential reading list below and provide you with some quick self- assessment questions to test whether you have read and absorbed what is required.

The essential reading can either be downloaded from on the links provided or from the free downloads areas of the CIBSE website (www.cibse.org/membersservices/downloads), or if you are a member the CIBSE Knowledge Portal (www.cibseknowledgeportal.co.uk). You will need to log in or register to get access to these areas.

Essential Reading

- The Recast Energy Performance of Buildings Directive
www.gov.uk/government/publications/improving-the-energy-efficiency-of-our-buildings
- Approved Document L2A: Conservation of fuel and power (New buildings other than dwellings) (2013 edition) www.planningportal.gov.uk/uploads/br/BR_PDF_AD_L2A_2013.pdf
- Approved Document L2B: Conservation of fuel and power (Existing buildings other than dwellings) (2010 edition and 2013 amendments)
www.planningportal.gov.uk/uploads/br/BR_PDF_AD_L2B_2011.pdf
www.planningportal.gov.uk/uploads/br/AD_L1B_L2B_amendments_2013.pdf
- Energy Performance of Buildings Regulations Statutory Instrument
www.legislation.gov.uk/uksi/2012/3118/made
- CLG Guide to energy performance certificates for construction, sale and let of non-dwellings
www.communities.gov.uk/publications/planningandbuilding/nondwelling
- Commercial EPC Conventions – Issue 5
www.cibseenergycentre.co.uk/images/stories/certification/Documents/commercial%20epc%20ew%20conventions%20issue%205%20-%20v1%200%20090714%20-%20issued%202.pdf
- National Calculation Methodology (2013)
www.ncm.bre.co.uk/filelibrary/NCM_Modelling_Guide_2013_Edition_06April2014.pdf

- Non-Domestic Building Services Compliance Guide (2013)
www.planningportal.gov.uk/uploads/br/domestic_building_services_compliance_guide.pdf
- Guide F - Energy efficiency in buildings (2012) Download from CIBSE website
www.cibse.org/membersservices/downloads/listings.asp or Knowledge Portal
- Energy Use in Offices ECG 019
www.carbontrust.co.uk/Publications/publicationdetail.htm?productid=ECG019&metaNoCache=1
- CIBSE Certification Code of Conduct www.cibseenergycentre.co.uk/assessor-area/code-of-conduct.html

iSBEM - Essential

Download iSBEM, user manual and NCM Modelling Guide 2013 from <http://www.ncm.bre.co.uk>

- Load the software
- Load the example building file (example building – complete)
- Run the example and check answers against questions 12-20 in route map

We have provided you with some extra reading and recommended websites which will help to give you an all-round holistic approach to part L. Any extra reading you do will help you to gain a good pass mark and extra reading is encouraged but not essential. It is expected that candidates will be familiar with many of these documents already.

Reference may be made to these in the training but you will not be disadvantaged if you are not overly familiar with them. If you would like view any of these documents, CIBSE members can do so on the Knowledge Portal or to purchase any of these additional reading materials please either call the publications department on 020 8675 5211 or order them on line at www.cibse.org/bookshop

Important reading

- Approved Document F - Ventilation (2013 edition)
- AM10: Natural ventilation in non-domestic buildings *
- TM22: Energy, assessment and reporting methodology *
- TM39: Building energy metering *
- Commissioning Code M: Commissioning management *
- TM31: Building log book toolkit *
- TM37: Design for improved solar shading control *
- The UK Climate Change Programme (DEFRA)
- The design team's guide to environmentally smart buildings GPG287
- TM38: Renewable energy sources for buildings (2006)*
- GPG388 CHP for Buildings (Carbon Trust)
- (CIBSE purchase or Knowledge Portal download for members)

Web sites to visit

- <https://www.cibseenergycentre.co.uk/>
- www.planningportal.gov.uk
- www.cibse.org (publications, low carbon consultants, LCC FAQ's, briefings, Part L conference webcast, Annual conference 2006 webcast)⁴
- www.100days.co.uk
- www.thecarbontrust.co.uk (publications)
- www.est.org

Route Map

The following provides a route through some of the key information by a series of actions and questions. You can self-assess yourself against the answers provided overleaf. We have reduced the size of these answers so that you don't look at them by mistake! To convert to a readable form simply highlight the answer and convert back to normal sized font.

1. What do TER and BER stand for in ADL2A. Establish how they relate in compliance.
2. Where are the u-values for the Notional Building found?
3. In ADL-2A What air permeability is allowed in SBEM for buildings less than 500m² if you do not wish to carry out a pressure test ?
4. In ADL-2B, what are the minimum values of consequential works required when extending a building over 1,000m²?
5. In ADL-2B, what is the minimum lighting efficacy required when upgrading a lighting system in an office?
6. In the Non Domestic Building Services Compliance Guide, what is the minimum effective heat generating seasonal efficiency for a single natural gas fired boiler >2 MW output?
7. In the Commercial EPC Conventions what should the efficiency of an electric room heater be?
8. In CIBSE Guide F, 2012, Section 8, what is the typical energy use for refrigeration in an air conditioned prestige office?
9. In CIBSE Guide F, 2012, Section 18, what is the typical efficiency of a three phase 30 kW motor?
10. In CIBSE Guide F, 2012, Section 20, what is the typical electricity consumption of a supermarket?
11. In CIBSE Guide F, 2012, Appendix A1, what is the calorific value of dry domestic wood and dry short rotation coppice?
12. In iSBEM example building, what is the external wall U value used?
13. In iSBEM example building, what is the heating seasonal efficiency?
14. In iSBEM example building, what is the specific fan power used?
15. In iSBEM example building, what is the BER?
16. In iSBEM example building, change the heat to biomass with default efficiency, what is the new BER?
17. Has it passed Part L on BER?
18. Now change the specific fan power to 0.6 W/l/s, what is the new BER?
19. Has it passed Part L on BER?
20. What is the cooling energy allocation for the notional building?

1. Target emissions Rating & Building Emissions Rating.
2. The NCM Modelling Guide 2013
3. 15 m³/m²/hr
4. Not less than 10% of the value of the principal works
5. The requirements would be met if the installed lighting has an average lamp plus ballast efficacy of not less than 60 lumens per circuit-Watt.
6. 86%
7. 100%
8. 100 -135 W/m².
9. 90%
10. 1026 kWh/m²/yr
11. 18.6 GJ/tonne
12. 0.16 W/m²k
13. 3.9
14. 0.8 W/litre/s
15. 41.56 kg CO₂/m²
16. 41.2 kg CO₂/m²
17. No initially, then no with biomass boiler
18. 39.83 kg CO₂/m² with heat pump
19. Yes
20. 15.12 kWh/m²/yr