

Introduction to the new SBEMie version 5.6a

1 Background

The Non-Domestic Energy Assessment Procedure (NEAP) is the methodology for demonstrating compliance with aspects of Part L of the Building Regulations and publishing Building Energy Ratings. SBEMie, the Simplified Building Energy Model for Ireland, is the model developed by BRE to calculate the energy performance and carbon emissions. iSBEMie is the freely available software for NEAP developed by BRE. Third-party software interfaces to SBEMie are also available.

The Building Energy Rating compares the performance of the actual building to that of the notional building. The compliance check for NZEB and Part L compares the performance of the actual building to that of the reference building.

A new version of the SBEMie model and interfaces (iSBEMie and third-party software) is being released to implement a change in the grid electricity factors.

2 Key changes from SBEMie 5.5h to SBEMie 5.6a

Version 5.6a of SBEMie has the following changes from version 5.5h of the software:

- Change in Primary Energy Factor for grid supplied electricity
- Change in Carbon Emission Factor for grid supplied electricity

The background information on the selection of the new electricity factors can be found in this document: <https://www.seai.ie/home-energy/building-energy-rating-ber/support-for-ber-assessors/software/deap/BER-Elec-Factors-Update-2023.pdf>

The specification of the notional building has not been updated from version 5.5h of the software. However, the Building Energy Rating may differ from those generated in previous versions of the software, depending on individual projects, due to the change to the Primary Energy Factor for Grid Supplied Electricity which is used in both the actual building and the notional building.

The specification of the reference building has not been updated from version 5.5h of the software. However, the Part L indicators and checks implemented in NEAP may differ from those generated with previous versions of the software, depending on individual projects, due to the change to the Primary Energy Factor for Grid Supplied Electricity which is used in both the actual building and the reference building.

3 Implementation Dates

The ability to publish BERs using the iSBEMie Version 5.5h software will be removed on 13 July 2023. Only BERs created in iSBEM v5.6a will be accepted by NDNAS after this changeover.

The ability to publish BERs using the iSBEMie Version 5.6b software will be added on 13 July 2023. Only BERs created in iSBEMie Version 5.5h will be accepted by NDNAS until this changeover.

In accordance with transitional arrangements, older factors may still be used to generate draft Part L reports in NEAP using the software version prior to the one including the update. A copy of the NEAP software prior to the update should be maintained in a separate folder on the user's PC for this purpose. BER assessors may produce a Part L report based on the currently published factors or on the primary energy factors that applied at the date of application for planning permission.

For example, depending on the date of application for planning permission, version 5.5h may still be used to produce a Part L report.

The primary responsibility for compliance with the requirements of the Building Regulations rests with the designers, builders and owners of buildings. Interpretation of the legislation is, ultimately, a matter for the Courts and implementation of the Building Control system is a matter for the local Building Control Authority.

4 Previous key changes (from SBEM 3.5 to SBEMie 5.5h)

The SBEMie Version 5.5h included changes in the following aspects from previous versions:

- NZEB Compliance Check
- Incorporation of the Renewable Energy Ratio
- Compliance Check for Solar Overheating
- Compliance Check for Heating, Cooling, Ventilation and Lighting Systems
- Change in Primary Energy Factor for Electricity
- Update to activity database to reflect Irish specific circumstances and research carried out by BRE
- Update in methodology for Unconditioned Adjoining Spaces
- Update in treatment of unconditioned zones in the Notional building.
- Enhanced calculations for heating and cooling demands
- Enhanced HVAC calculation including
 - Bivalent Systems
 - Demand Control Ventilation
 - Local SFP entry for systems such as FCU
 - VSD pumps for Heating and Cooling
 - Provision for night cooling
- Enhanced Lighting calculation including
 - Provision for LED lighting
 - Inclusion of the Light Output Ratio
 - Updated approach to display lighting time switching
- Enhanced Renewable calculation including
 - Inclusion of allowance for Renewables from District Heating Schemes
 - Inclusion for Peak Power in photovoltaics
 - Inclusion for allowance of renewables from process energy.
- Enhanced shading calculations

The specification of the reference building has been updated from version 3.5 to version 5.5h to account for changes to the Building Regulations.

The specification of the notional building has not been updated from version 3.5 to version 5.5h. However, with the development of the software to incorporate improvements to the calculations, additional features, modifications to databases and corrections of known issues, Building Energy Ratings generated with version 5.5h may differ from those previous versions of the software,

depending on individual projects. However, the enhanced functionality and additional features to the software allows assessors more accurately account for energy saving measures such as night cooling, demand control ventilation etc.

5 File Conversions

It is possible to convert files created in previous versions of the iSBEMie software.

Section 8 of the iSBEMie User Guide “How to use iSBEMie (1) Basics” describes the conversion procedure in detail.

Due to the nature of the changes introduced in the new version some fields may not be refreshed automatically. Therefore, it is essential to do the following:

- Click through all the zones in the Geometry form
- Click through all the envelope elements in the Geometry form
- Click through all the HVAC systems in the Building Services form
- Click through all the sub tabs in the Building Services form > Zones tab

Note: It is only possible to convert from earlier versions of software to later versions of software. Care must be taken to retain versions of nct files generated using earlier software if required for building regulation compliance checks. It is not possible to convert an iSBEMie Version 5.6a nct file back to an earlier version.

5.1 iSBEMie file conversion from version 5.5h to version 5.6a

As outlined in this document there are differences in the software between iSBEMie Version 5.6a and iSBEM Version 5.5h. It is essential that BER assessors review **all** of the tabs and sub tabs to check that the data has been converted successfully.

5.2 iSBEMie file conversion from version 3.5b to version 5.5h or 5.6a

As outlined in this document there are many differences in the software between iSBEMie Version 5.5h/5.6a and previous versions of the software. It is essential that BER assessors review **all** of the tabs and sub tabs to provide input for parameters that did not exist in previous versions. Some key features that were identified during testing as requiring further review include:

- General Information > Building Details:
An Eircode is a Mandatory Field to run the software
- General Information > Energy Assessor Details:
May need to be completed
- Project Database:
Default constructions within the database have been updated and may need adjustment
- Geometry > Zones
The activity database has been updated and may need to be considered.
- Geometry > Global Thermal Bridges:
Accredited detail “Tick” box is no longer a function in the tool, Psi values will need to be manually entered.
- Geometry > Envelope

A new "Perimeter" field in the tool, this will default to a value however may impact on thermal bridging calculations and should be updated appropriately.

- Geometry > Windows & Rooflights
New fields for "Aspect Ratio", "Shading Position", "Shading Colour", "Shading translucency" and "Tick if overhang is a brise soleil" which may need to be addressed.
- Building Services > HVAC Systems > System Adjustment
New entries associated with Variable Speed Pumps therefore may need to be updated.
- Building Services > PVS
New entries associated with "Peak Power", "Overshading" and "Ventilation Strategy", this will be defaulted to conservative values and therefore should be updated appropriately.
- Building Services > Zones > Ventilation
New entries associated with Demand Controlled Ventilation
- Building Services > Zones > Ventilation (cont)
New entries associated with "Night Cooling", "SFP of system terminal units" and "SFP for Night Cooling" that will default. Heat Recovery from previous version may not convert correctly as it's a new tab therefore should be updated appropriately.
- Building Services > Lighting
New entry for Light Output Ration under "Lighting Chosen but calculation not carried out" which will be defaulted to conservative value and should be updated appropriately.