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EDGE USER GUIDE

Part 1

- Building Certification Guidance

Version 3

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Official Document

Contents

Introduction

EDGE (Excellence in Design for Greater Efficiencies) is a standard, a green building certification and an online app of the International Finance Corporation (IFC). This document is part of a series of documents aimed at the global harmonization of the EDGE buildings certification process.

In these documents, "Must" and "Shall" are used to prescribe obligatory actions. "Can" implies that there is an option or ability to do something, but it is not required. Lastly, "May" grants permission or suggests that an action is permissible, providing flexibility or discretion to the *project team*.

The main target group for this document are *EDGE experts, EDGE auditors, EDGE certification providers,* and anyone interested in learning more about the certification.

The **Part 1 – Building Certification Guidance** document serves as a fundamental policy resource, offering instructions for certification, an overview of the certification procedure, and information on the types of buildings eligible for certification. This key document applies to all projects around the world and shall be used as the primary guide throughout the certification process. It is to be used in conjunction with Parts 2 to 6, which provide specific guidance on utilizing the EDGE App.

Table 1 shows the relative position of this document within the set of EDGE user guides. When officially released, after the period for public comment, these documents shall replace EDGE User Guide Version 3.0.a.

Table 1: Position of this document within the EDGE V3 modules.

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To share feedback with the EDGE team, please send suggestions along with relevant documentation to edge@ifc.org.

Glossary

AHU	Air Handling Unit
ARI	Air-conditioning and Refrigeration Institute
ASHRAE	American Society of Heating Refrigerating and Air-conditioning Engineers
BRI	Building Resilience Index
DNSH	Do Not Significant Harm
EDGE	Excellence in Design for Greater Efficiencies
EPI	Energy Performance Index (kWh/m^2/year)
GHG	Greenhouse gas
GIA	Gross Internal Area
GWP	Global Warming Potential
HVAC	Heating, Ventilation and Air-conditioning
IEC	International Electrotechnical Commission
I-RECs	International Renewable Energy Certificates
ISO	International Organization for Standardization
kW	Kilowatt
kWh	Kilowatt-hour
NZEB	Nearly Zero-Energy Building
PED	Primary Energy Demand
PUE	Power Use Effectiveness
RECs	Renewable Energy Certificates
RICS	The Royal Institution of Chartered Surveyors
UNFCCC	United Nations Framework Convention on Climate Change
ZC	Zero Carbon
ZCR	Zero Carbon Renewal

EDGE Certification Guidance

EDGE certification is a green building certification system that is designed to promote resource-efficient and sustainable building practices. EDGE certification focuses on three key areas: energy, water, and embodied energy in materials. It provides a framework for evaluating and quantifying the environmental impact of a building, considering factors such as energy efficiency, water conservation, and the use of sustainable materials.

Definitions

While the definitions described in this section are relevant to the certification guidance, additional definitions may be found in the *Glossary for the EDGE Governance Protocol* document.

Building

Defined as a permanent and thermally conditioned construction with at least one full-time equivalent occupant, and a primary use that falls with the typologies available in the EDGE App. At minimum, a *building* shall include water provisions for occupants, lighting systems and a purposely designed thermal conditioning system consisting of active technical building systems and/or natural ventilation. All fossil fuels, electricity and water used during operations shall be measured or measurable.

If two *buildings* are connected by a thermally conditioned space, then they may be considered as a single *building*. Notice that certain components of a *building* may be physically separated. Examples include a cafeteria and individual classrooms of a school that are essential for the functioning of the *building*. Constructions that do not meet the definition of *building* are not certifiable under EDGE. For questions about specific constructions reach out to the EDGE team at edge@ifc.org.

Building envelope

It refers to the combined surface area of all components of a *building* that surround its thermally conditioned spaces. These components separate the interior from the external environment and do not include surfaces adjacent to other buildings.

Building footprint

It refers to the area of ground that a *building* occupies as defined by its perimeter.

Building site

It is defined both the land parcel, and the building(s) situated on it.

Primary/secondary use

The main function that the buildings serve, typically described as a typology. A building may have a secondary use, i.e. a different typology, which may lead to the need for splitting the building into *subprojects*.

Project boundary

The physical scope of the EDGE certification, including all services required to support the functionality of the *building*, including the area for on-site renewable energy. The project boundary area may be larger than the *building footprint* and *building site*.

Project

Is defined as the *building,* a group of *buildings*, an entire residential development, or portfolio submitted for EDGE certification with the same *certification provider* and owner. For example, it may be a residential *building* with two towers, a mixed-use *building* with offices and retail space, or multiple *buildings* with the same ownership and different locations for the case of a portfolio. The information in the Project section in EDGE is the top-level information that applies to all its *subprojects*.

Subproject

Refers to the portion of the *project* modeled individually in EDGE. The information contained in the *subproject* section applies only to the portion being modeled in that file. For example, a *subproject* may be the residential section of a mixed-use tower, the retail space in mixed-use development, or an individual location for a chain of stores.

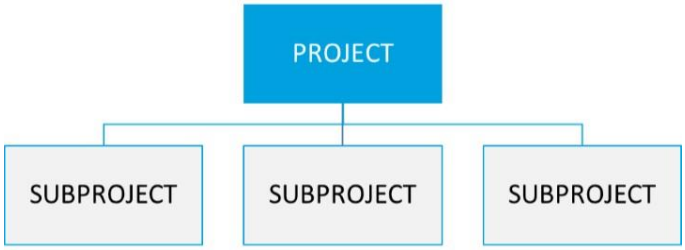


Figure 1. Relationship between project and subprojects.

If a *building* has more than one use and the secondary use occupies less than 10% of the floor area up to a maximum of 1,000m², the entire building can be certified under the primary use of the building in a single *subproject*. Otherwise, that portion shall be certified separately. For example, if a 10,000m² residential building has a retail portion of 1,200m² located within the ground floor, the *building* areas must be certified separately under the Homes and Retail typologies.

For grouping of multiple *buildings* into one subproject, refer to the *Grouping Multiple Buildings into One Subproject,* section.

To achieve certification, 100% of the GIA reported in a subproject must be available for audit. If the building is developed in phases, individual subprojects must be created accordingly.

Unit

Is an apartment or a home. Units can be defined as single or multiple typologies within the same subproject. Refer to *Annex 1: Grouping Logic for Residential Units* for information grouping units and *Annex 3: Unfinished/Partially Finished* for minimal conditions and penalty factors.

EDGE Certification

EDGE certification is awarded if the required minimum efficiencies of 20% are achieved in the three EDGE categories — Energy, Water, and Materials. A simple pass/fail system indicates whether the *building* project has demonstrated the minimum 20% savings in operational energy, water and embodied energy in materials compared to the base case model. Actual percentage savings for each project can be seen on the EDGE certificate as well as in project case studies on the EDGE website. The entire certification process is conducted online through the **EDGE App**, which is managed and maintained by the IFC.

EDGE certification is a one-time award that does not need to be renewed. Recognition is issued automatically at the time of the awarding of a preliminary EDGE certificate and/or final EDGE certification and indicated on the EDGE certificate for such a project; it does not require additional documentation or fees.

EDGE Advanced Certification

EDGE Advanced status indicates that an EDGE project has achieved 40% or greater savings in Energy, beyond the minimum *EDGE certification* requirements. To meet the requirements for water savings and savings in embodied carbon of materials, a minimum of 20% savings over the base case is still necessary.

EDGE Zero Carbon Certification

Definition

An **EDGE Zero Carbon** *building* is defined as one that is committed to resource-efficient operations, maximizes on-site renewable energy generation, and responsibly procures offsite energy and carbon offsets, achieving zero net GHG emissions. The certification requires organizations to commit to a plan for **achieving** and **maintaining** net zero carbon operations for their certified buildings.

The prioritization for achieving a *Zero Carbon* project is described in Figure 2. Initially, to enhance energy efficiency by reducing demand with passive design strategies. Subsequently, design teams need to fulfil the remaining energy requirements using efficient *building services*. The next step is to maximize the generation of renewable energy on-site, followed by supplementing with renewable energy generated off-site. Utilizing carbon offsets shall be considered a last resource after all other options have been exhausted.

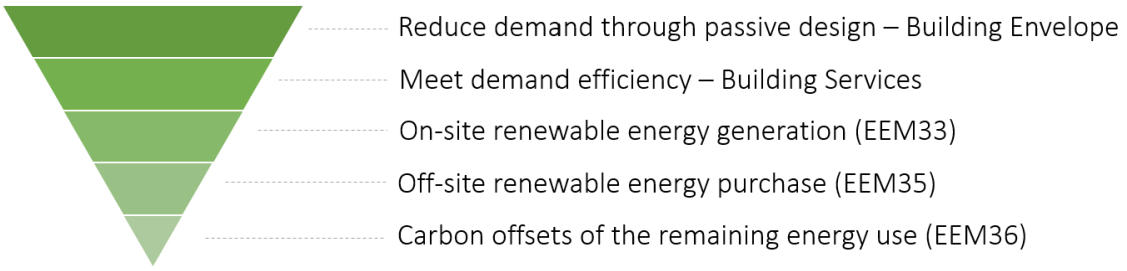


Figure 2: Prioritization of energy efficiency and energy sources to achieve the EDGE Zero Carbon certification.

Additionally, *project teams* attempting to achieve *Zero Carbon* certification must submit an updated *GHG emissions mitigation plan* with short, medium, and long-term absolute emissions reduction targets compliant with *ISO Net Zero Guidelines - ISO IWA 42:2022* (Chapter 9)[1]. This plan shall also include a roadmap for:

- Keeping refrigerant emissions below 675 $kgCO_2e/kg$ (or any future value for GWP for R-32[2]),
- Phasing out the use of fossil fuels on-site for operational energy (excluding emergency and backup systems),
- Maximizing on-site electricity generation within the limits of physical space availability and jurisdictional regulations, and,
- Reducing carbon offset credits so that they are less than or equal to the total of the refrigerant mass leakage plus 20% of the emissions from *imported energy*, as defined in *ASHRAE Standard 228-2023*.

If *project teams* can demonstrate compliance with all the above points, they are not required to present a roadmap. In such cases, the *GHG emissions mitigation plan* may be limited to maintaining GHG emissions within a specified value.

Operational Energy Scope

The operational energy scope corresponds to the B6, and B7 life cycle stages as defined in the RICS's *Whole life carbon assessment for the built environment* standard. If the *building* is certified as *EDGE Advanced*, the scope includes the *building's* energy consumption in accordance with the end-uses defined in the energy tab, including process loads within the perimeter boundary. However, the following exceptions may apply in both cases:

[1] IWA 42:2022(en) Net Zero Guidelines: https://www.iso.org/obp/ui/#iso:std:iso:iwa:42:ed-1:v1:en

[2] R-32 Refrigerant information for technicians: https://arctick.org/information/r32/

- Energy used for EV charging stations,
- Energy used within internal and external car parks,
- Process loads that are already regulated under IFC-approved emissions trading schemes.

Eligibility Requirements

There are three requirements for *subprojects* to be eligible for EDGE *Zero Carbon* certification:

1. The *primary use* must be among those that are included in the EDGE App:
    a. Residential: Homes & Apartments*
    b. Serviced Apartments
    c. Hotels & Resorts
    d. Hospitals
    e. Industrial
    f. Offices
    g. Education
    h. Retail
    i. Mixed Use

    Carbon offsets do not apply for residential *buildings* and the entire *subproject* must pursue the *EDGE Zero Carbon* certification, rather than individual units. If the final certification is achieved in phases, the subproject may apply for a *Preliminary EDGE Zero Carbon* certification.

2. A *building* must have been in operation for at least one year at 75 percent of normal occupancy.

3. A *building* must be certified as *EDGE Advanced* or equivalent[3].

On-site Energy Requirements

On-site renewable energy systems must be within the *project boundary*. Additionally, the *building* owner must either own the renewable energy system, have a lease for them, or have entered a contract to buy the energy they produce for a minimum duration of 15 years.

Offsite Energy Requirements

The subproject can earn credit for using off-site renewable energy if the renewable energy certificates (RECs) are retired. These RECs should be transferred and retired for the *subproject*, ensuring that the renewable energy is not part of the regular grid power.

If the off-site renewable energy is sourced from a third party, the contract must be for at least 15 years. The electricity should be delivered through a local network with enough capacity.

Examples of off-site renewable energy options include purchased RECs/I-RECs or Power Purchase Agreements (PPAs).

For more details on eligible off-site energy, refer to *ASHRAE 228-2023 Informative Appendix B*, which outlines recommended characteristics for off-site renewable energy procurement.

[3] Buildings that meet specific criteria under EDGE for Operations may also qualify for EDGE Zero Carbon certification instead of EDGE Advanced certification. For more information, review the corresponding documentation in the EDGE user documents.

Carbon Offset Requirements

Carbon offsets can be procured to compensate for GHG emissions from on-site sources, including fossil fuels and refrigerant leakage, as well as any remaining emissions from imported energy.

If applying carbon offsets, they shall be purchased from a provider that:

1. Requires the use of a credible methodology, such as:
    - Gold Standard
    - Verra's Verified Carbon Standard
    - ACR: Carbon Crediting Program for Offsets
    - Climate Action Reserve

    Note: ClimateSEED and UNFCCC Clean Development Mechanism (CDM) have been removed from the list to align with IFC's Deal Acceptance Criteria for Carbon Markets.
2. Adhere to the ten core carbon principles set by the Integrity Council for Voluntary Carbon Markets (ICVCM), where applicable,
3. Favor Independent Carbon Rating Agencies for quality assessment, and
4. Have a benefit-sharing plan.

The carbon credits must be from a vintage (year) that is within five years before or after the end date of the reporting period.

RECs that do not qualify as *offsite renewable energy* due to the unavailability of local REC providers in a particular country or jurisdiction may be claimed as *carbon offsets* for electricity covered within the *Operational Energy Scope*.

Reporting Timeline

The *EDGE Zero Carbon* timeline for first-time certification is presented in Figure 3. The reporting period must include data from the previous 12 consecutive months. The *EDGE Zero Carbon* certification must start within 6 months of the last reporting month.

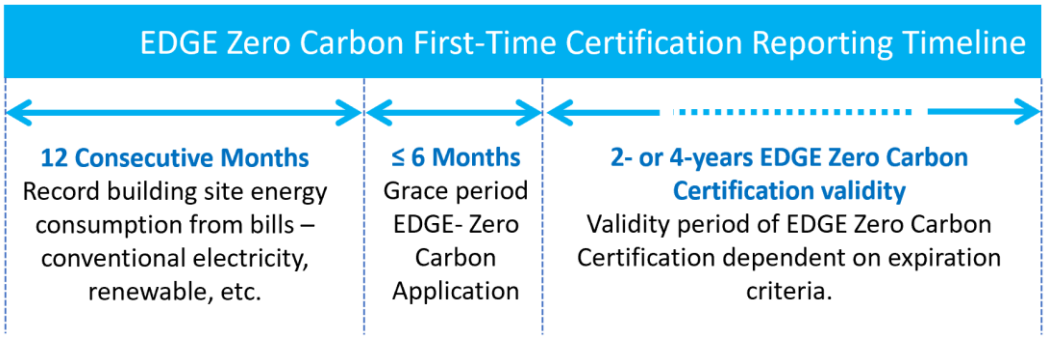


Figure 3. EDGE Zero Carbon timeline for first-time certification.

For example: If the reporting period is from July 2022 to June 2023 the limit to apply for *Zero Carbon* Certification by December is 2023.

For *Zero Carbon Renewal* (ZCR) timeline is presented in Figure 4. The reporting period must cover the entire duration of the previous *EDGE Zero Carbon* certificate.

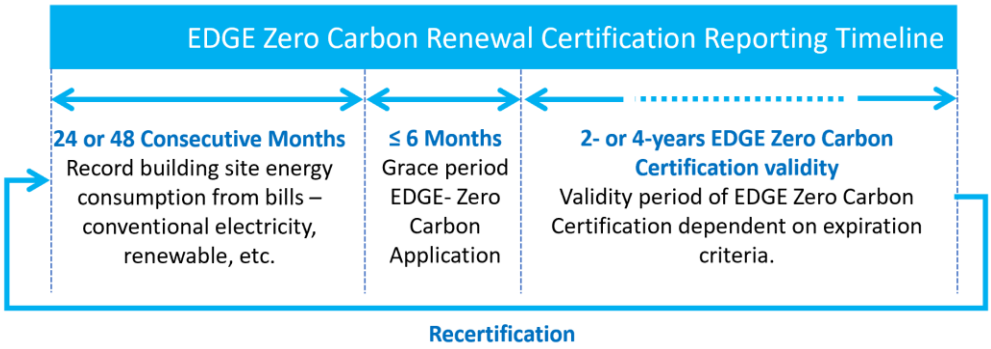


Figure 4: EDGE Zero Carbon Renewal timeline.

For example: If the previous *EDGE Zero Carbon* certificate lasted two years, the reporting period shall cover 24 months.

Documentation Requirements

When obtaining *EDGE Zero Carbon* certification for a project, gather the following information:

1. **Proof of 40 per cent energy savings from the EDGE baseline**: Download, save and provide a PDF of the certificate for the project from your dashboard in the EDGE App that demonstrates EDGE Advanced status or equivalent[3]. The *EDGE Advanced* certificate is a one-time assessment of the asset that will not need to be provided at the time of recertification unless the *building* undergoes substantial changes such as occupancy changes, a significant addition (more than 10 per cent of the GIA) or a major renovation.
2. **Reporting period**: The reporting period must follow the guidelines outlined in the *Reporting Timeline* section.
3. **Declaration of occupancy**: A signed declaration by the project owner or their authorized representative that the project has been occupied at 75 per cent of expected occupancy for the reporting period.
4. **Project area**: *Building* plans showing the GIA – air-conditioned and un -conditioned – of the *building*, and the total GIA for input into the calculator. The GIA does not include balconies and terraces, exterior areas or site areas. The EDGE project's PDF report showing the GIA, and the project file number will be sufficient for verification.
5. **Operations Tab – Completed:** All energy use information must be entered into the *EDGE Operations* Tab. The data entered in the Operations Tab in the EDGE App must have supporting documentation attached.
6. **Energy bills and meter readings**: Utility Bills or readings for the reporting period for every source of energy used in the *building* according to the *Operational Energy Scope*. The bills or meter readings must meet the conditions stated in the *Reporting Timeline* section. Supporting documentation may include the following:
    a. Conventional Electricity Bills (kWh)
    b. Onsite Renewable Energy Generated, Consumed and Exported (kWh) – Meter or *Building* Management System Readings.
    c. Offsite Renewable Electricity Bills (kWh). The type of offsite renewable energy (e.g. solar, wind, etc.) shall be highlighted.
    d. Bills indicating the quantity of diesel used on site (in Liters)
    e. Bills indicating the quantity of LPG used on site (in kg)
    f. Bills indicating the quantity of natural gas used on site (in m^3)

7. **Purchased offsite energy and/or carbon offsets:** Provide proof of procured offsite energy (in kWh) and carbon offset certificates or proof of purchase of carbon offsets (in tCO_2e) meeting the conditions stated in the *Reporting Timeline* section.
8. **The updated GHG Emissions Mitigation Plan and Roadmap:** This plan is detailed in the *Definition* section. During *Zero Carbon* Renovation, if there are any significant deviations from the original goals, a justification must be provided along with an action plan to return to the originally planned timelines.

Documentation Submission

All energy use information must be input into the *EDGE Operations* Tab. Supporting documentation shall be uploaded into the EDGE App in the Operations tab.

The documentation is then submitted for verification by the *certification provider*, who may request additional information or evidence within three rounds. During this process, the *Updated GHG Emissions Mitigation Plan and Roadmap* will be reviewed. Any deviations from the original goals must be justified and accompanied by an action plan. Failure to provide the requested information or evidence, or unjustified deviations from the management plan and roadmap, may result in disqualification from renewal.

Once the verification process is successfully completed, an *EDGE Zero Carbon* certificate will be issued.

Certification Expiration

The *EDGE Zero Carbon* certificate will display the year of awarding and expiration according to the following:

- For a project that meets the *EDGE Zero Carbon* criteria fully on-site, including the generation of on-site renewable energy, the certificate will expire after four years.
- For a project that meets the *EDGE Zero Carbon* criteria by purchasing off-site renewable electricity and/or carbon offsets, the certificate will expire after two years.
- The *EDGE Zero Carbon* certification is rendered invalid when there is a transfer of ownership of the *building,* or the *building* undergoes significant occupancy changes or substantial changes (as defined in the Documentation Requirements, point A).

Recertification

A project that has been previously certified as *EDGE Zero Carbon* can undergo *EDGE Zero Carbon Renewal* (ZCR) to maintain its *EDGE Zero Carbon* status with the following conditions.

1. **Maintain *EDGE Advanced* or equivalent[3] certification**:
    - If the *building* has not had substantial changes (as defined in Documentation Requirements, point A) since the last *EDGE Zero Carbon* certification the project owner or their designated representative must provide a signed statement to that effect.
    - If the *building* has had substantial changes (as defined in Documentation Requirements, point A), the *project team* must show that the energy savings of the building are 40 percent in the latest version of the EDGE App.
2. **Annual records of performance and *updated GHG Emissions Mitigation Plan and Roadmap***: The *project team* must submit annual records of information according to the *Documentation Requirements section*, covering the entire duration of the previous *Zero Carbon* certificate as per the *Reporting Timeline* section.
3. **Submit documentation:** The *project team* must then submit documentation as per the *Documentation Submission* section.

Retrofit Projects

EDGE Zero Carbon retrofit projects follow the same guidelines as those for new construction and existing *buildings*. However, rather than having achieved *EDGE Advanced* or equivalent[3], they have a defined plan to reach the necessary energy efficiency levels within a specified timeframe instead.

A *project team* working on a retrofit *subproject* may apply for a *Preliminary EDGE Zero Carbon* certification before achieving post construction EDGE Advanced certificate or equivalent[3] under the following conditions:

- The retrofit *subproject* must demonstrate its work plan on how it will achieve EDGE Advanced or equivalent[3] when the retrofit is complete,
- If the *EDGE Advanced* route is chosen, a *Preliminary EDGE Advanced* certificate must have been achieved
- The project owner must provide a signed letter stating that the retrofit measures will be implemented within two years of the award of the *Preliminary EDGE Zero Carbon* certification, and
- The *project team* must demonstrate the purchase of eligible offsite renewable energy or carbon offsets covering operational emissions for the *building* from the previous 12 consecutive months.

Note: A *GHG Emissions Mitigation Plan and Roadmap* is not needed for Preliminary EDGE Zero Carbon certification

When a retrofit project is pending a final (post construction) *EDGE Advanced* or equivalent[3] certificate, the *Preliminary EDGE Zero Carbon* certificate will show that:

- The project is pending upgrades, and
- The certificate is valid for two years.

By the end of the two-year period, the *subproject* must have achieved final *EDGE Advanced* or equivalent[3] certification, offset operational emissions for that period, and created a *GHG Emissions Mitigation Plan and Roadmap* to achieve *EDGE Zero Carbon*.

Normative References

1. International Organization for Standardization. (2022). *ISO IWA 42:2022: Net zero guidelines*. ISO. https://www.iso.org/obp/ui/#iso:std:iso:iwa:42:ed-1:v1:en
2. Royal Institution of Chartered Surveyors. (2024). *Whole life carbon assessment for the built environment* (p. 94). RICS. Retrieved August 14, 2024, from https://www.rics.org/profession-standards/rics-standards-and-guidance/sector-standards/construction-standards/whole-life-carbon-assessment
3. Verra. (2019). *Verified Carbon Standard, VCS Standard Version 4.7*. Verra. https://verra.org
4. Climate Action Reserve. (2021). *Reserve Offset Program, Version February 2021*. Climate Action Reserve. https://www.climateactionreserve.org/
5. Gold Standard. (2019). *Gold Standard, Version 1.2*. Gold Standard. https://www.goldstandard.org
6. American Carbon Registry. (2023). *ACR Standard, Version 8.0*. Retrieved October 5, 2023, from https://acrcarbon.org/

Project Roles

Project Team

In the EDGE certification system, a project owner is the designated individual or representative responsible for the entire project. This includes providing project documentation, granting access to the site, and paying audit and certification fees. An *EDGE Expert* is a certified individual proficient in using the EDGE App and understanding the certification process; they may be part of the owner's organization or an independent service provider.

The project owner appoints a **project team**, which may include an EDGE Expert, to demonstrate that the project complies with the EDGE standard. The *project team* achieves this by documenting that the overall project and the selected individual measures meet the specifications and minimum performance requirements set by EDGE.

Four distinct user roles for an EDGE project team are available in the EDGE App to represent the typical certification responsibilities.

1. A *Project Owner* can assign or remove any user role and create/edit/delete *projects* in the EDGE App.
2. A *Project Admin* is the EDGE Expert or a trained EDGE user who manages the certification flow of the project on behalf of the owner.
3. A *Project Editor* is typically someone from the design team who can edit the project details and documentation.
4. A *Project Viewer* can track the project's progress without the ability to edit.

EDGE Auditors

EDGE Auditors (henceforth referred to as *auditors*) are EDGE Experts who have been further *accredited* to conduct project audits for EDGE certification. The role of the *auditor* is to verify that the design/construction team has interpreted the EDGE requirements correctly and that all compliance requirements have been fulfilled. Depending on the country and the *certification provider*, an *auditor* may be part of the *certification provider*'s team or hired independently. In either case, the project owner is responsible for the *auditor* fees.

The *auditor* reviews the supporting evidence provided by the *project team* to ensure that it matches the data used in the assessment and performs on-site audits. *Auditors* must be able to verify that 100% the *subproject* is substantially completed for any *building type*.

In the case of repetition in design, an *auditor* must verify the following at a minimum:

- Homes and Apartments — (square root of the number of units) +1, for each unit typology
- Hotels, Resorts, Serviced Apartments — (square root of the number of rooms) +1, for each type
- Healthcare — (square root of the number of rooms) +1, for each type
- Retail, Industry, Office, Education — 40% of similar areas for a project
- Mixed Use — Each use type to follow the respective rules from above
- *Multiple buildings* — (square root of the number of *buildings*) +1

If the subproject multiplier is above 1, consider:

- For homes and apartments, combine units of the same typology the apply formula above
- For other types, calculate the square root of the number of buildings +1, then apply the formula above

EDGE Certification Providers

EDGE Certification Providers (henceforth referred to as *certification providers*) are licensed by IFC to operate in designated countries. Their role is to oversee *auditors* and issue the EDGE certificates. Information on contacting local *certification providers* is available on the 'Certify' page at www.edgebuildings.com. The project owner is responsible for paying the certification fees to the EDGE *certification provider*.

EDGE Certification Process

The certification process involves auditing the project documentation submitted by the *project team* and a site audit, followed by the award of the certificate. Requirements for EDGE compliance, at both the preliminary and post-construction phases, are specified for each measure in this guide, and include such deliverables as design drawings, manufacturers' data sheets, calculations, proof of delivery and photographs.

Preliminary Certification: A desktop review of the project is undertaken based on the project's design documentation. For *subprojects* linked to *New Construction* and *Renovation of Existing Buildings*, *project teams* may need to comply with EU taxonomy requirements. In such cases, they may refer to *Annex 4: EU Taxonomy Technical Alignment.*

Post Construction Certification: A site audit of the project is required for the *auditor* to verify the installation and compliance requirements of all selected measures in EDGE. For *subprojects* linked to *Renovation of Existing Buildings* and *Renovation of Existing Buildings*, *project teams* may need to comply with EU taxonomy requirements. In such cases, they may refer to *Annex 4: EU Taxonomy Technical Alignment*

All audits shall be directly conducted by an accredited *auditor*, with certification being awarded by a *certification provider*.

To begin the certification process, the project owner/EDGE Expert may request a quote from the local *certification provider* via the Certify page on the EDGE buildings website; they may also 'Express Interest' via the EDGE App to request a quote from the *certification provider* or local *auditor*(s). Or a project may choose to directly 'Register' in the EDGE App.

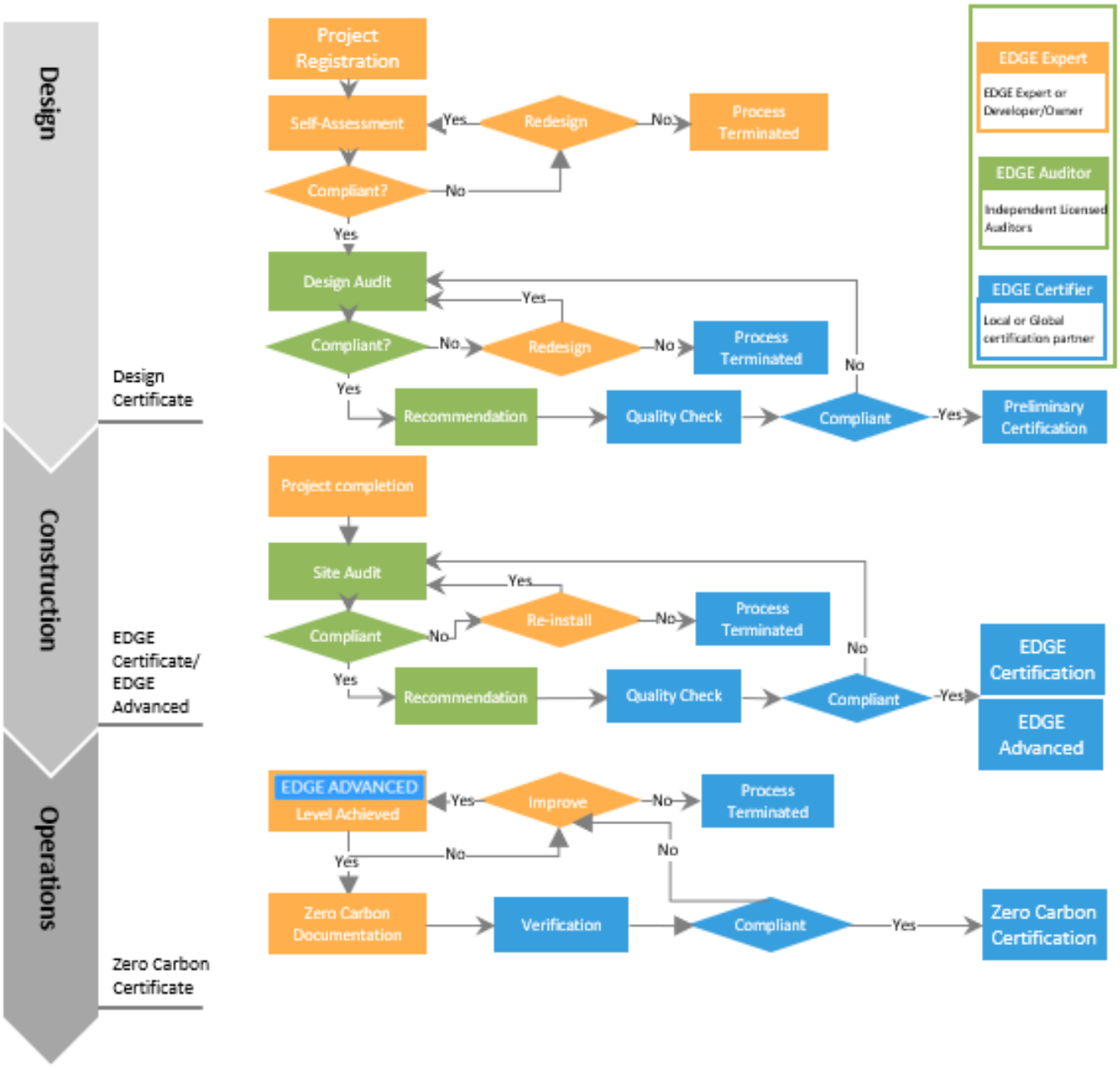


Figure 5. EDGE Certification Process.

Documentation Requirements

Subproject-level documentation is uploaded to the EDGE App. In general terms, the following documents, where relevant, are required to demonstrate compliance:

- Design documentation showing (intended) compliance with the requirements of the measure.
- Technical justification of the inputs provided in the design tab that creates the base case.
- A brief explanation of the design drawings, relevant system or product specified/installed.
- Calculations that have been used to assess and demonstrate compliance.
- Manufacturer's data sheets, with the information required to demonstrate compliance highlighted.

- Construction Documentation, such as as-built drawings, BOQs and/or photographs that demonstrate the construction was as per the design documentation.

The documentation required for subsections in the design tab can be found in **Part 2 - User Guide - Design Tab**

The documentation required for individual measures is included in the Compliance Guidance section of each measure in:

- **Part 3 – User Guide - Energy Measures**
- **Part 4 – User Guide - Water Measures**
- **Part 5 – User Guide - Materials Measures**

The documentation required for the operations tab can be found in the Documentation Requirements sections, as part of the *EDGE Zero Carbon* Certification.

Non-Typical EDGE Projects

Special Ruling Request (SRR)

A Special Ruling Request (SRR) is a mechanism for *project teams* to request a special ruling on the eligibility of a method or measure that has not been included in the EDGE App, to determine compliance with EDGE. This is applicable for situations where *project teams* may want to (1) use an alternative method to comply with the intent of an EDGE Measure, or (2) use innovative strategies not included in the available EDGE Measures to reduce energy consumption. For example, an SRR would be required for using an alternate tool outside EDGE to calculate the Average Annual Shading Factor (AASF) or to calculate the savings from a cooling system type that is not available in EDGE.

The approved SRR report means that a *project team* has received special permission from IFC's EDGE Global Team to use an out-of-the-norm procedure for claiming measure savings in the EDGE App. Actual compliance with the intent of the measure will still be subject to an audit.

In general, the EDGE User Guides and the Frequently Asked Questions available on the EDGE website serve as a starting point for questions related to the EDGE certification. If a *project team* has gone through the steps above and still needs documentation of approval for an atypical approach to its project, it can request a Special Ruling Request form from the *certification provider*.

An SRR is specific to each project. When the content becomes universally applicable, it will be added to the User Guide and no longer require an SRR for compliance.

Minimum Requirements for an SRR

- The *subproject* identifier (file number)
- The intended energy improvement per end use in kWh/m^2/year,
- The *Project team* submitting an SRR shall belong to a registered project,
- Be presented in PDF format.
-

Grouping Multiple Buildings into One Subproject

When *buildings* are grouped in one subproject but are not identical, *project teams* may combine GIA, and areas of the roof, external walls, and other parts to certify as a single *subproject* provided that certain conditions are met. A single certificate is given for the combined *building*. When combining buildings, the *subproject multiplier* must be always 1. Combined *buildings* resulting in a GIA of 50,000m² or above must seek approval from IFC.

To group physical *buildings* into a single *subproject*, the following criteria must be met:

- Construction occurs in the same phase, or all *buildings* are fully constructed
- In commercial buildings, a single entity manages and operates the heating, cooling, ventilation, and hot water services. Tenants may use decentralized systems
- The *buildings* operate on the same days and have similar operating hours, with less than a three-hour difference
- Similar HVAC systems are used to condition them
- All users are expected to utilize all the facilities provided regularly
- All buildings shall be of the same sub-typology
- They shall have a standard deviation of up to 2 floors or 10% normalized, whichever is higher.

Example of standard calculation deviation

Building A: 5 Floors Building B: 7 floors Building C: 3 floors

To calculate standard deviation:

$$Standard\ dev\ (floors) = \sqrt{\frac{\sum(Number\ of\ floor\ per\ building - \ average\ floors)^2}{Number\ of\ buildings}}$$

$$= \sqrt{\frac{8}{3}} = \mathbf{1.63\ floors.}$$

To calculate the normalized standard deviation:

$$Normalized\ Standard\ dev\ (\%) = \frac{Standard\ dev\ (floors)}{average\ floors}\ x\ 100\%$$

$$= \frac{1.63}{5}\ x\ 100\% = \mathbf{33.7\%}$$

This means building A, B and C cannot be grouped into a subproject due to Normalized Standard Deviation being >10%.

Buildings being combined shall:

- Use the *EEM01 window-to-wall ratio* detailed calculator.
- Use the weighted average for the floor-to-floor height and number of floors by area.
- Add up all the *building envelope* lengths by orientation.
- Add up all the roof areas into one.

Note 1: Each subproject will receive a single certificate (except homes and apartments).

Note 2: The *project team* may decide to create separate *subprojects* even if they meet the conditions above. This is especially relevant when more granularity in the EDGE App is required to better assess the impact of measures.

Note 3: Thermally conditioned basements that have a significantly larger footprint (i.e., >10% of *building footprint*) compared to the *building* tower shall be separated into a different subproject. Partially conditioned

basements that have >10% of the building footprint, with the conditioned space within the *building footprint*, will not be required to have a separate subproject.

Existing Building and Retrofit Projects

Existing *buildings* may apply for EDGE certification. The same standards for energy and water apply to existing *buildings* as for new construction.

Existing *building* and retrofit projects that do not have details on the building element construction shall use the thickness of the wall and provide a calculation using the default base case, e.g. brick walls with no insulation. The same applies same for roofs and other passive elements.

Materials in existing *buildings* that are being kept in the *building* or re-used and are older than five years may be claimed as "re-used." (This applies to re-use of materials older than five years in new construction as well). To claim a *building* as existing and/or to claim re-use of materials, the *project team* must provide documentation from the formal local source that shows the date when the building was constructed or last modified. For example, the formal source in a location may be a building department and the documents may be drawings stamped by the *building* department. Pictures of the existing *building* and materials shall also be provided as evidence.

Note: Existing *buildings* and Retrofit projects have the same calculation methodology in the EDGE app.

Reporting Equipment Loads from Existing Buildings

For existing *buildings* and major renovations that are currently in operation, it is highly recommended to report equipment and plug loads, as shown in Figure 6, in line with the *Operational Energy Scope*. This practice helps to reduce discrepancies between the expected and the actual loads. By doing so, the predictive accuracy of the EDGE App is enhanced, leading to better-informed decision-making.

Calculator

Detailed Loads Input

Activities	Space Conditioning Type	EDGE Default Space Conditioning	Default Heating and Cooling Set-point Temperature	Plug Loads (W/m^2)	Equipment Load (W/m^2)	People Sensible Heat (W/Person/Hour)
Bedroom	Both Heating and ...	AC & HTG	C 24°C & H 22°C			
Kitchen	Both Heating and ...	NON AC & NO HTG	C 24°C & H 22°C			
Dining	Both Heating and ...	AC & HTG	C 24°C & H 22°C			
Living	Both Heating and ...	AC & HTG	C 24°C & H 22°C			

Figure 6: Plug and Equipment Loads in the Detailed Loads Input.

Note: For detailed information on each of the columns editable by the *project teams*, consult *Part 2 - User Guide -Design Tab – Area & Loads Breakdown - Detail Load Inputs*.

To report equipment and plug loads, the *project team* shall follow these steps:

1. **Inventory Equipment:** Create a detailed inventory of all equipment in the building that consumes energy, including appliances, office equipment, and any specialty equipment.

2. **Record Specifications**: For each piece of equipment, record detailed specifications such as make, model, power rating (watts or kilowatts), and operational schedules. This information can often be found on the equipment nameplate or in the manufacturer's documentation. If the number of equipment units is large (e.g. > 50 pumps), *Part 2 - User Guide -Design Tab, Annex 1: Sampling Methodology* may be used.
3. **Calculate Loads:** Use the recorded power ratings to calculate the load of each piece of equipment. For variable loads or equipment that cycles on and off, estimate the average load based on typical usage patterns.
4. **Summarize Data:** Organize the equipment loads in a spreadsheet, categorizing them by type and including subtotals for each category.
5. **Apply Diversity Factors**: Not all equipment will operate at full capacity simultaneously. Apply diversity factors to account for such variation in use. If this value is not known, assume 0.5.
6. **Calculate electricity use by area**: Divide the resulting loads (in Watts) by the corresponding space area (m^2). Provide such value in the corresponding column (Plug Loads or Equipment Loads) in the Detailed Loads Input.

The plug and equipment load report shall be attached as part of the documentation in the Design tab section, if applicable.

For the case of Kitchen and & Food Prep Loads, shown in Figure 7, good practices for documenting information include:

- Building surveys of current occupants, observing Part 2 - User Guide -Design Tab, Annex 1: Sampling Methodology requirements,
- Direct evidence from energy meters, sensors, or other measurements,
- A narrative justification of the consumption patterns that aligns with the actual kitchen facilities in the project.

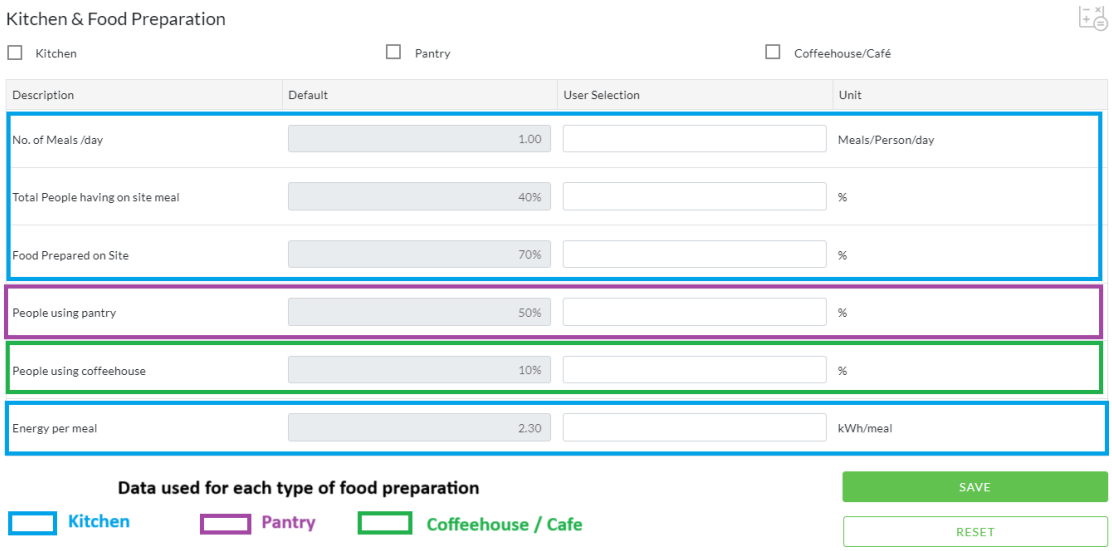


Figure 7: EDGE Kitchen & Food Preparation data.

Note: For detailed information on each of the columns editable by the *project teams*, consult *Part 2 - User Guide -Design Tab – Area & Loads Breakdown - Kitchen & Food Prep Loads Inputs*.

Core & Shell Subprojects

Core and Shell are commercial and/or industrial *subprojects* where the owner is responsible for the building exterior ("shell") and the core facilities ("core"), but the interior areas are constructed by the tenants ("fit out"). The owner or developer must certify the entire space they own/develop. Besides, the total energy used by the tenant, as defined in the *Operational Energy Scope*, must be estimated based on the likely primary use of the entire lettable space. Additional requirements may apply for *Industrial Buildings*.

For Core and Shell *subprojects*, the measures for which the tenants are responsible can also be claimed in line with *Annex* 2: Core & Shell Measures.

In commercial buildings, this is allowed only if a "tenant fit-out guide" is included in the lease agreement and signed between the tenants and owners. This tenant fit-out guide must define the requirements to be fulfilled by the tenants for the measure and be included in the EDGE submission. If some of the tenants have not signed a lease at the time of EDGE certification, the *building* owner must show EDGE compliance by providing the template of the lease agreement accompanied by a signed letter stating that the tenant fit-out guide in the template lease agreement will be included in all tenant lease agreements signed for the building.

For example, if an office building for lease is not fitted with lighting fixtures for tenants and there is no provision for efficient lighting in a binding lease agreement or similar provision, then this measure cannot be claimed for those spaces.

Savings that can be passed to home owners in residential *subprojects* are found in the *Annex 3: Unfinished/Partially Finished Residential Buildings* section.

Minimum Water Fixtures for Residential Units

To be certifiable, *all* units in residential *subprojects* must include at least one installed fixture for:

- WEM01 Water-efficient Showerheads
- WEM02 Water-efficient Faucets for Bathrooms
- WEM04 Efficient Water Closets for Bathrooms
- WEM08 Water-efficient Faucets for Kitchen Sinks

A penalty factor will be applied based on the percentage of fixtures per measure that are not installed in the entire *subproject*. Details are as follows:

- **Mandatory Installation:** *All* units in residential *subprojects* must include at least one *installed* fixture for each of the water measures listed above to be certifiable. See the definition below of *installed* fixture.
- **Installed Fixture Definition:** A fixture that is audited and ready for occupant use. For fixtures claiming hot water, the *auditor* must verify that the fixture can deliver hot water at the design supply temperature. Fixtures not considered *installed* are assumed to have a *base case* flow and count toward the *penalty factor.*
- **Flow Restrictors:** These can only be used once the *mandatory installation* requirement has been met. After that, audited water outlets with flow restrictors are considered *installed* and may claim savings.
- **Penalty Factor:** This factor is applied to the flowrates for each measure in the subproject before it is reported in the EDGE App as the improved case. The *penalty factor* varies according to the percentage of fixtures per measure that are not *installed* in the entire subproject, as shown in Table 2.

Table 2: Base case penalty value for Water Fixtures that are not included in home units.

% of fixtures not installed	Base Case Penalty Factor
0 < current % ≤ 10	1.1
10 < current % ≤ 20	1.15
20 < current % ≤ 30	1.20
30 < current % ≤ 40	1.28
40 < current % ≤ 50	1.38
current % > 50	1.53

To calculate the value that will be entered in the EDGE App, it is first required to calculate the Weighted Average Improved Case ($Weighted\ Average_{Improved\ Case}$):

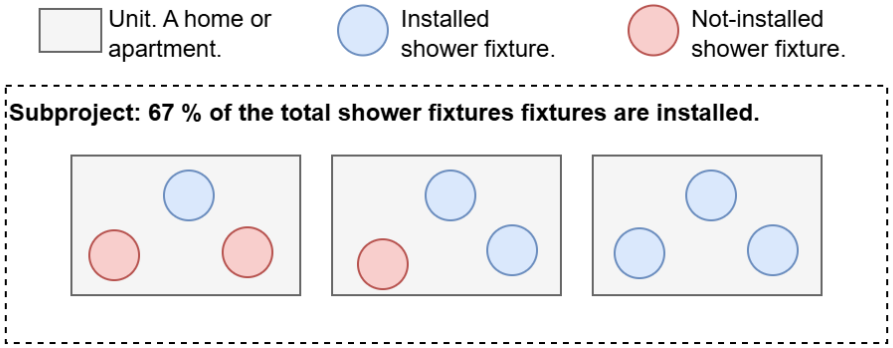
$$Weighted\ Average_{Improved\ Case}\ \left(\frac{l}{s}\right) = \frac{\left(N_{non\ installed\ fixtures} *\ Flow\ Rate_{Base\ Case}\right) + \left(N_{installed\ fixture} * Flow\ Rate_{Improved\ Case}\right)}{\left(N_{non\ installed\ fixtures} + N_{installed\ fixture}\right)}$$

And then multiply the $Weighted\ Average_{Improved\ Case}$ by the $Penalty\ Factor$, obtained from Table 2:

$$Weighted\ average_{Improved\ case\ final}\left(\frac{l}{s}\right) = Weighted\ Average_{Improved\ Case}\ \left(\frac{l}{s}\right) * Penalty\ Factor$$

Example: WEM01 Water-efficient Showerheads

Consider the following subproject, which includes three units. Each unit contains three shower fixtures, making a total of nine fixtures. Out of these, six fixtures have been installed (indicated in blue), while three fixtures have not been installed (indicated in red).



Step-by-step calculations:

Table 3: Example of base and improved case flowrates. Note that 33% of the fixtures for the entire subproject have not been installed, leading to a penalty factor of 1.28.

Case	Flow Rate (l/s)	Number of fixtures
Base	9.50	3
Improved	4.70	6

1. Calculate the weighted average improved case

$$Weighted\ Average_{Improved\ Case}\left(\frac{l}{s}\right) = \frac{(3 * 9.50) + (6 * 4.70)}{(3 + 6)}$$

$$Weighted\ Average_{Improved\ Case}\left(\frac{l}{s}\right) = 6.30$$

2. Find the improved case flowrate with a penalty factor of 1.28, corresponding to 33% of non-installed fixtures.

$$Improved\ case\left(\frac{l}{s}\right) = 6.30 * 1.28$$

$$Improved\ case\left(\frac{l}{s}\right) = 8.06$$

Partial Building Subprojects

A part of a commercial or industrial *building* may apply for EDGE certification. Residential *buildings* cannot apply for partial building projects. Partial building projects may be either owner led, or tenant led:

- For owner-led certification, the owner must certify all areas within the building that are under the same ownership. The energy required for common amenities, shared services, outdoor, exterior areas and parking must be proportionally assigned (e.g. by floor area) to the owner.
- For tenant-led certification, the tenant must certify all areas that are part of their lease agreement. Certification of the tenanted area shall expire upon the departure of the tenant from the certified area. Additionally, the energy for thermal conditioning of the *building* must be included, even in the scenario where a centralized HVAC system is present. The energy required for common amenities, shared services, outdoor, exterior areas and parking may be excluded.

The certification of partial building *subprojects* must:

- Meet the definition of *Building*,
- Be fully sub-metered for electricity, with additional fuels also being measurable in line with the *Operational Energy Scope*,
- Be capable of having an independent user schedule separate from other spaces, and
  Be physically defined by a permanent barrier, such as interior and/or exterior walls.

For partial building projects, the following entries must be made in the EDGE App, as applicable:

- For the *building envelope*, the external wall lengths, materials, and Window-to-Wall Ratio (WWR) should reflect the actual space applying for certification.
- Subtract the portion of a *building's* wall that is not exposed to the exterior.
- Enter the ceiling area as the roof area. If there are permanently conditioned floors above the project, input a U-value of 0.01 W/m^{2}K in *EEM05 Insulation of Roof*. If the project is on the topmost floor, enter the actual U-value of the roof in *EEM05 Insulation of Roof*.
- If the space under the floor is permanently conditioned, use a U-value of 0.01 W/m^{2}K for *EEM06 Insulation of Ground/Raised Floor Slab*. If the certification area is on the bottom floor, use the known U-value for the bottom floor; if unknown, use the base case U-value.
- Bathroom fixtures and fittings may not be within the *building* but could be within the *project boundary*. In this case, the *project team* must obtain water consumption data (liters per flush, flow rates) for all shared facilities. If water fixtures specifications are not available, onsite measurements are required.

Industrial Buildings

Unlike most building typologies, for industrial buildings there is no assumption of business as usual related to process loads, i.e. equipment and plug gains. The *project team* shall actively document each of the relevant loads and provide them to the EDGE app in line with the *Operational Energy Scope.*

In order of importance, *project teams* shall either:

1. Provide an equipment schedule following steps in *Reporting Equipment Loads from Existing Buildings* section, where buildings are fully operational at the time of the certification, if this option is not possible, then,
2. Calculate the process loads by estimating equipment gains for similar industrial subtypes (usage) in the region and/or the client's own portfolios; or
3. Assume:
   - For the warehouse *subtypology*, 35% of the GIA as *cold storage* area.
   - For the light industry *subtypology*, 70% of the equipment loads contribute to the total energy consumption of the base case scenario (i.e., prior to the implementation of on-site renewable energy sources).

Portfolio Projects

To standardize audits and reduce documentation review efforts*, project teams* may choose to apply for portfolio *projects* when *buildings* with shared ownership are expected to be certified within a similar timeframe. These *buildings* can be grouped together based on the following characteristics:

- Age of the *building*
- Jurisdiction, typically referring to the country
- Climate zone, such as whether the area is cooling or heating dominated
- Building fabric performance, including aspects like *building envelope* and glazing specifications
- Technical building systems performance, such as HVAC efficiencies and distribution systems
- The type of EDGE efficiency measures claimed.

Note: Portfolio clustering excludes residential typologies (i.e., Homes & Apartments)

If this is the case, the process for portfolio certification is indicated in Figure 8.

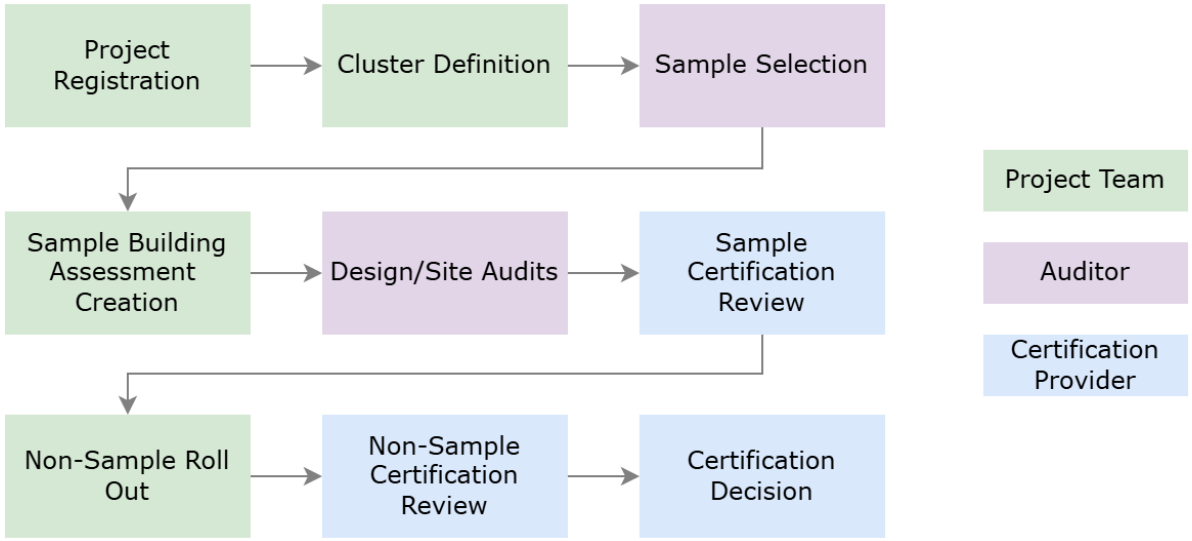


Figure 8:Portfolio certification step-by-step process.

Step-by-step process

1. **Registration**:
    a. The *project team* submits a list of all portfolio buildings intended for certification to the *certification provider.*
    b. The *project team* informs the *certification provider* of the selected *auditor*.
    c. Note: This 'registration' does not refer to the registration of *projects* in the EDGE App. It involves submitting a list of buildings to the *certification provider*, as not all buildings will be created on the EDGE App simultaneously.
2. **Cluster Definition:**
    a. The *project team* divides all portfolio *buildings* intended for certification into clusters of buildings with similar characteristics, following the *Annex 5: Portfolio Clustering Workflow.*
3. **Sample Selection:**
    a. The *auditor* selects a representative sample of buildings to be audited. For relatively homogeneous buildings, 10% of the buildings per cluster, selected at random, shall be audited. Exceptions apply.
4. **Sample Building Assessment Creation:**
    a. The *project team* creates EDGE assessments for each sample building (as selected by the *auditor* in the previous step) in the EDGE App, uploading documentation for the Design Tab and each measure claimed, in line with the guidelines.
    b. The *certification provider* assigns the appointed *auditor* to the relevant *subprojects* in the EDGE App.
    c. The *project team* submits samples to the *auditor* on the EDGE App for audit.
5. **Design/Site Audits**
    a. The *auditor* performs design/site audits for sample buildings.
    b. The *auditor* checks that all samples have the same measure selection.
6. **Sample Certification Review**
    a. If the *auditor* finds no obvious non-conformities or non-compliances during the audit, the *auditor* submits the sample buildings for *certification provider* review on the EDGE App.
    b. The *certification provider* completes a review of each sample building in the EDGE App.
    c. Note: If one sample building in the cluster fails to achieve certification, other sample buildings that pass the EDGE standard can still be awarded certification, but all non-sampled buildings in that cluster will fail to achieve certification.
7. **Non-Sample Roll Out**
    a. The *certification provider* confirms that all sample buildings in the same cluster have been approved and that measures are consistent between them.
    b. The *certification provider* selects the building with the worst specifications as the template building for non-sample creation.
    c. The *certification provider* requests the Client to create non-sampled building assessments based on the template assessment.
    d. The *project team* creates non-sample assessments in the EDGE App, using the Save As function With Documents, modifying only the Design Tab input and *EEM01 Window-to-Wall Ratio*.
    e. The *project team* notifies the *certification provider* through email when assessments have been created according to the initial list of buildings registered with the *certification provider*, without submitting for audit on the App. (Status on app: “Project Registered”)
    f. Note: In this process, all non-samples will use the same documentation and have the same input on all selected measures as the template assessment. This might not reflect the actual performance of each building.

8. **Non-Sample Certification Review**
    a. The *certification provider* reviews updated sections of the non-sample assessments in the EDGE App.
    b. Note 1: This non-sample certification process does not involve any changes in certification status on the EDGE App, assessments on the EDGE App are not locked for review, and *auditors* do not perform any audits.
    c. Note 2: If a non-sample building fails to achieve the standard required for certification, then that non-sample will not be certified with this cluster. It can, however, be re-registered and certified in the future with a new batch of buildings.
9. **Certification Decision**
    a. Following the complete review of the cluster, the *certification provider* issues electronic certificates in the EDGE App for each approved building, using the *Certify through Reference* function.

Data Centers

EDGE offers *project teams* the opportunity to certify data centers as green, although this certification is currently in the pilot phase. Any data center worldwide, whether new or existing, is eligible to apply. To be eligible for EDGE certification, data centers must meet the following three requirements:

1. The *primary purpose* of the *building* must be to serve as a data center.
2. The data center must achieve a minimum of 20 percent savings in water and embodied energy in materials, according to the EDGE standard.
3. The Power Usage Effectiveness (PUE) of the data center must be at least 20% better than the baseline PUE. PUE is calculated as follows:

$$PUE = \frac{Total\ annual\ energy\ entering\ the\ data\ center\ measured\ at\ its\ boundary}{Annual\ energy\ used\ by\ the\ IT\ equipment\ inside\ the\ datacenter}$$

EDGE utilizes the PUE (power usage effectiveness) as the energy baseline for data centers. PUE is a metric defined by The Green Grid that describes how efficiently a data center uses energy. It is a ratio of the total amount of energy used by a facility to the energy delivered to IT equipment.

The baseline PUE values used in EDGE are shown in Table 4. These values are subject to change after the pilot phase.

Table 4: Baseline and Target PUE per Climate Type.

Climate Type	Baseline PUE	Target PUE for EDGE Certified (20% improved)	Target PUE for EDGE Advanced (40% improved)	Target PUE for EDGE Zero Carbon Certification
Hot & Humid Climate (ASHRAE Climate Zones 1A, 2A, 3A)	1.95	1.56	1.17 (1.36 excluding offsite renewable energy)	1.17 (1.36 excluding offsite renewable energy)
Other Climate Zones	1.81	1.45	1.09 (1.27 excluding offsite renewable energy)	1.09 (1.27 excluding offsite renewable energy)

Data centers with at least 20% improvement in PUE will achieve *EDGE Certified* status and data centers with at least 40% improvement in PUE will achieve *EDGE Advanced* status.

Certification Guidance

Project teams shall follow the following guidelines to show compliance with the EDGE standard:

A. The *project team* shall model the data center as a subproject under the *Mixed Use* typology.
B. Under the Design tab, the area designated as data center shall use the area of the same name, Figure 9. Other areas must be modelled to cover the entire Gross Internal Area (GIA) of the *building.*

Figure 9: Data centers subprojects shall report the entire GIA of the building using the corresponding areas.

C. Under the Design tab modify the detail loads input calculator to reflect the IT equipment load as close as possible to the PUE report results.
D. The *project team* shall calculate the total PUE Category 2 as defined by *ISO/IEC 30134-2:2016 Information technology — Data centers — Key performance indicators — Part 2: Power usage effectiveness (PUE).*
    a. Readings must be made as total kWh over a 12-month period.
    b. All fuel types serving the data center must be converted to equivalent kWh.
E. The PUE may include renewable energy. $PUE_{onsite\ RE}$, which includes onsite renewable energy, shall be calculated with the following equation for onsite renewable energy:

$$PUE_{onsite\ RE} = \frac{Total\ annual\ energy\ entering\ the\ data\ center - annual\ onsite\ renewable\ energy\ production}{Annual\ energy\ used\ by\ IT\ equipment\ inside\ the\ data\ center}$$

F. If applicable, PUE_{RE}, which includes renewable energy, shall be calculated with the following equation for onsite and eligible offsite renewable energy:

$$PUE_{RE} = \frac{Total\ annual\ energy\ entering\ the\ data\ center - annual\ onsite\ renewable\ energy - annual\ offsite\ renewable\ energy}{Annual\ energy\ used\ by\ IT\ equipment\ inside\ the\ data\ center}$$

Eligible offsite renewable energy, as per *Offsite Energy Requirements* section, can count toward contribution to PUE only for *EDGE Advanced* and *EDGE Zero Carbon* certification for a maximum of 10% with respect to the PUE baseline, see Table 4.

G. The following steps must be followed in the Energy, Water and Measure tabs:
    a. Complete the mandatory measures in the Energy tab to accurately represent the actual conditions of the building, as outlined in *Part 3 – User Guide - Energy Measures*.
    b. Calculate the percentage improvement in PUE compared to the baseline. The savings are calculated as follows:

$$Overall\ Energy\ Savings\ (\%) = 1 - \frac{PUE_{RE}}{PUE\ baseline}$$

c. If applicable, enable *EEM33 – Onsite Renewable Energy* to reflect the percentage of onsite renewable electricity. Note that this measure impacts both energy savings and operational emissions.
d. Enable *EEM34 – Other Energy Saving* to match the overall energy savings.
e. If applicable, select *EEM35 – Offsite Renewable Energy Procurement* to reflect the percentage of eligible offsite renewable electricity. Note that this measure impacts only operational emissions, not energy savings.
f. Complete the at least mandatory Water Measures tab as you would for any other project. Water required for cooling may be excluded from the water calculation unless otherwise specified by IFC.
g. Complete the Material Measures tab as you would for any other project. Refer to *Part 5 – User Guide - Material Measures* for special considerations regarding miscellaneous structural loads.

H. Upload evidence and external calculations in the measure documentation of all selected measures.
I. The project's *auditor* shall send the PUE report to IFC (edge@ifc.org) for review and approval before recommending the project for certification.

Documentation Submission

A. **Energy Measures Preliminary Documentation:** The approved PUE report approved by IFC, which shall include details of all the inputs and assumptions that were used in the simulation:
   a. Weather file
   b. Building construction and fenestration details (U-values, SRI, WWR, etc.)
   c. Lighting power densities
   d. Occupancy, lighting, and equipment profiles
   e. Indoor temperature and humidity set points
   f. HVAC systems details (capacity, efficiency, part load performance etc.)
B. **Energy Measures Post Construction Documentation:** Including, where applicable:
   a. The updated PUE report.
   b. As-built drawings showing envelope and fenestration details and calculations of:
      i. Glass: U-value ($W/m^2 K$), SHGC, VT(Factor).
      ii. Floors: U-value ($W/m^2 K$), Weighted Average U-value ($W/m^2 K$), if applicable
      iii. Roofs: Roof Assembly U-value ($W/m^2 K$), Weighted Average Roof U-value ($W/m^2 K$), if applicable
      iv. Exterior Walls: U-value ($W/m^2 K$), Weighted Average Roof U-value ($W/m^2 K$), if applicable
      v. Window-to-wall ratio: Average WWR (%)
   c. As-built drawings and data sheet showing room loads per areas, include occupancy and lighting power density assumptions.
   d. Final load schedule showing, including (when applicable): model, quantities, power input, electrical characteristics, capacity, location, COP. Examples of equipment include:
      i. FCUs
      ii. Make up air units
      iii. Air handling units
      iv. Air conditioning units
      v. Chillers
      vi. Water pumps
      vii. Chilled water coils
      viii. Fans and blowers
      ix. Fuel oil bulk storage tank

x. Air separator
xi. Expansion tank

e. As-built PUE calculation table showing:
   i. Annual energy used by the IT equipment inside the datacenter (kWh). Proof that it is the same as the total IT demand load calculated for capacity planning.
   ii. The annual facility loads calculation (kWh). Include a facility load breakdown, for example:
      1. Lighting
      2. Cooling system (e.g., SPLCs)
      3. Chillers
      4. Chilled water pumps
      5. Condenser water pumps
      6. Coil/Fan Walls
      7. AHUs/FCUs/CUs
      8. Fans
      9. PDUs and transformers
      10. Transformers
      11. General losses (transformer, distribution, generator, UPS, switches, etc.)

C. **Water and Materials**: The documentation of water and material measures are documented any other project, as specified in *Part 4 – User Guide - Water Measures* and *Part 5 – User Guide - Material Measures* guidance.

Navigating the EDGE App

The EDGE App is designed with a simple, user-friendly interface. This section highlights a few key features.

The EDGE App loads in the Homes typology by default. A user can select a different typology from the sidebar on the left as shown in Figure 10, or from the drop down menu in the first panel. From the top right options, a user can view their user dashboard, change the version and language, and sign in.

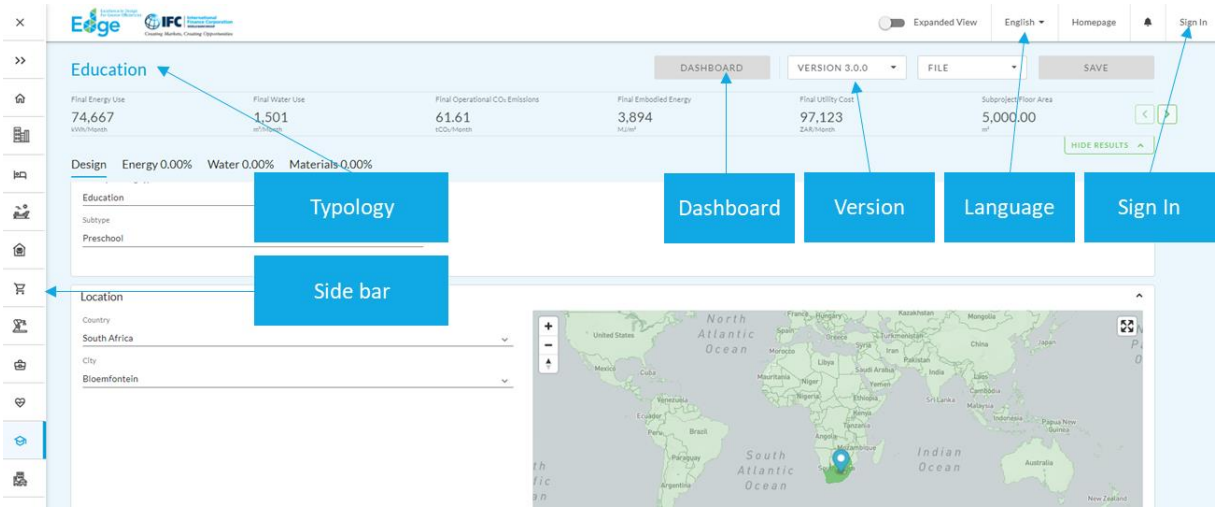


Figure 10. Screenshot showing the primary layout of the EDGE App

Figure 11 shows the main tabs — Design, Energy, Water and Materials. Above the tabs is the Results bar. Some panels on the Design tab, and all Measures, have an Options menu. The Options menu can provide several functions depending on the panel, such as Detailed Inputs, Calculators, or Document Upload.

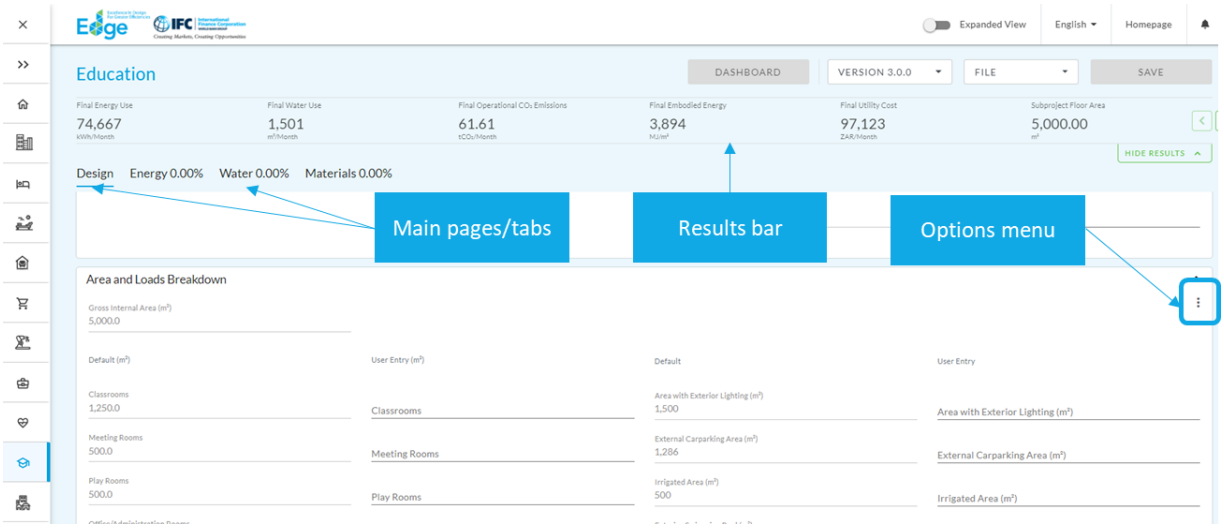


Figure 11. Screenshot of the EDGE App showing key features – the Main Pages or Tabs, Results Bar, and the Options Menu

Default Values and User Entries

The EDGE App is designed with default input values for all fields so that users can model the buildings with minimal inputs.

However, users must note that the EDGE App *will* use the default values unless a user overwrites them. Therefore, attention must be paid to the default values, especially during the certification process, to confirm that the assumptions reflect the actual building.

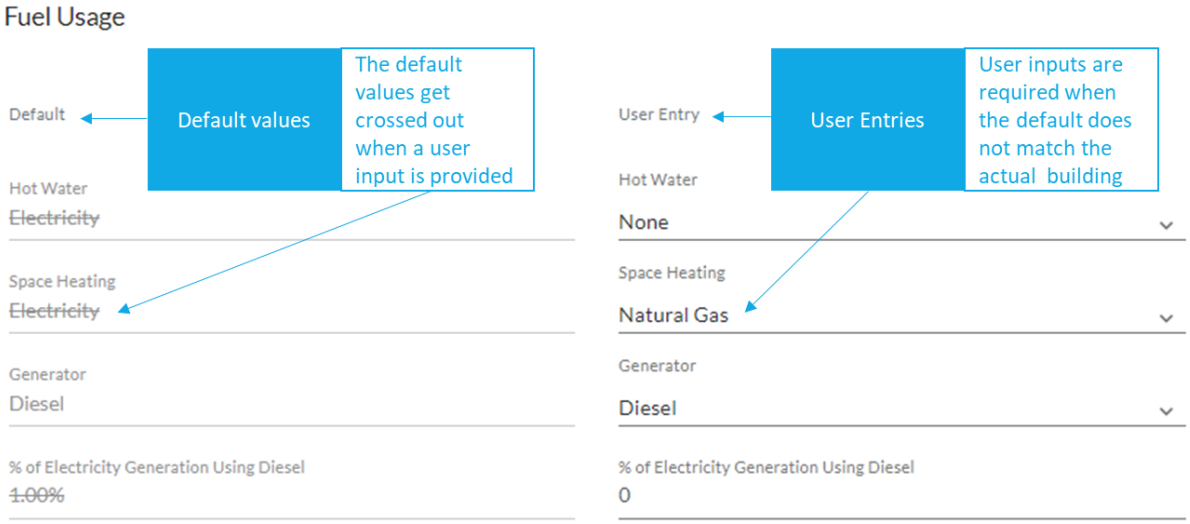


Figure 12. An example of default values and user entries in the EDGE App

Tip: Underlined field names in EDGE are editable.

Clicking on the field name displays the input field.

Figure 13. Most fields in the EDGE App are editable.

Similarly, most efficiency measures are editable. However, their availability may vary per building typology.

Selecting a measure displays the possible inputs. The value associated with a measure gets overwritten by the user input. For example, in the measure *EEM01 Window-to-Wall Ratio* in Figure 14, a user can overwrite the value 16% with the actual value in the project. Some measures will have a calculator. If this is present, you may edit it by clicking the three dots on the right side of the box, and then selecting “calculator”. *Project teams* shall utilize the calculators where applicable.

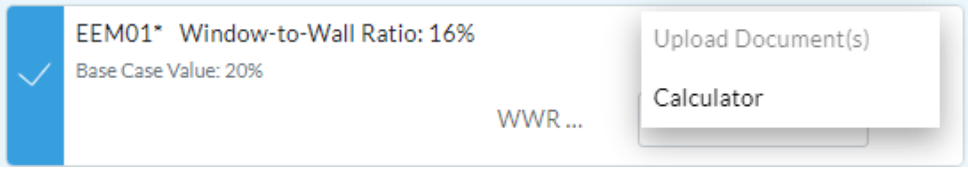


Figure 14. Most measures in the EDGE App are editable.

Required Measures

In EDGE, an asterisk (*) next to a measure indicates that the *project team* is required to enter the actual specifications of the measure in EDGE if that measure is present in the project.

The indication of a "required" measure in EDGE does not mean that EDGE requires that the measure must be implemented in the project, or that the improved case must meet or exceed the baseline case to comply with EDGE requirements.

For example, if a residential project needs to report glazing material, the measure must be selected, and the actual specifications of the glazing must be entered into the user input fields for the measure regardless of whether there is an improvement in glazing specifications or not.

Results Bar

The Results Bar in the EDGE App is a summary of the Key Performance Indicators (KPIs) calculated by EDGE. To calculate performance against these indicators, EDGE makes assumptions on how the building will be used by the occupants. Since the actual usage patterns may differ depending on occupant consumption, the water and energy usage and subsequent costs may vary from EDGE predictions. The KPIs include:

- Final Energy Use – the energy consumption (in kWh/year) for the project is calculated automatically by EDGE, based on the data entered in the Design section and any reduction achieved through the selection of efficiency measures. The results exclude all virtual energy.
- Final Water Use – the water consumption (in m^3/year) for the project is calculated automatically by EDGE, based on the data entered in the Design section and any reduction achieved through the selection of water efficiency measures.
- Final Operational CO_2 Emissions – the CO_2 emissions (in t CO_2/year) based on the final energy use multiplied by the CO_2 emission factor for the generation of grid electricity and other fuels in the project. The default value for the selected country's CO_2 emissions is shown in the Design section but can be overwritten if evidence can be provided to support it. The evidence must be from a reliable source such as a peer-reviewed publication from an international organization or a specialized government-approved study. The results exclude all virtual energy.
- Final Embodied Carbon – the embodied carbon (in tCO_2e/m^2) from the building dimensions and the materials selected in the Materials section.
- Final Utility Cost – the monthly cost (in USD/year or local currency per year) for energy and water use. The results exclude all virtual energy.
- Subproject Floor Area – the calculated GIA for the Subproject multiplied by the Subproject Multiplier.
- Energy Savings. The results include all virtual energy.
- Water Savings.
- Operational CO_2 Savings. The results include all virtual energy.
- Embodied Energy Savings.

- Utility Cost Savings – the annual savings (in USD and local currency in specific countries) in utility bills. The results include all virtual energy.
- Base Case EPI (Energy Performance Index) — energy use per unit area. The results include all virtual energy.
- Improved Case EPI (Energy Performance Index) — energy use per unit area. The results include all virtual energy.
- Total Building Construction.
- Incremental Cost – Additional cost of implementing the selected efficiency measures (in USD or local currency in specific countries). Certain building measures may contribute to a lower overall cost compared to the baseline. Therefore, negative incremental costs are possible. EDGE cost data is based on average global data and is continuously being refined. It is only meant as a guidance tool for comparison between measures. If specific local data is available, the use of it in a more specific financial model is encouraged for making financial decisions.
- Increase in Cost (%).
- Payback in Years – Number of years to repay the incremental cost compared to the cost savings of utilities. The method used is simple payback based on the capital cost of the measure.
- Number of People Impacted.
- Base Case – Refrigerant Global Warming Potential.
- Improved Case – Refrigerant Global Warming Potential.
- Detailed Results for Typologies – Only applicable to Residential typology. It activates when *multiple typologies* are modelled.

Saving a Project

Users can save their *projects* within the EDGE App.

- A user account is required to save a project file, and a user must be logged in to save the project.
- Fields marked with an asterisk* on the Design tab are also required to save the project file.

EDGE can be accessed via handheld devices such as iPhones, Android and tablets. *Project teams* should exercise caution when accessing saved *projects* via handheld devices as EDGE automatically saves changes to *projects* every three minutes; this time limit does not apply to *certification providers*.

If a user is not active on EDGE for two hours, the system will log the user out. This duration of time for which their session stays active while they are away from their computer can be changed by the user in their profile settings.

To create multiple versions of a project with different combinations of measures, it is best to retain your inputs by downloading the data into separate PDFs and saving the documents on your computer (File > Download PDF). In this way, you maintain one project file for your building within EDGE.

Annex 1: Grouping Logic for Residential Units

In the EDGE App V3, it is possible to group similar typologies of residential units using the "Multiple Typologies" functionality, as shown in Figure 15, instead of creating separate *subprojects*.

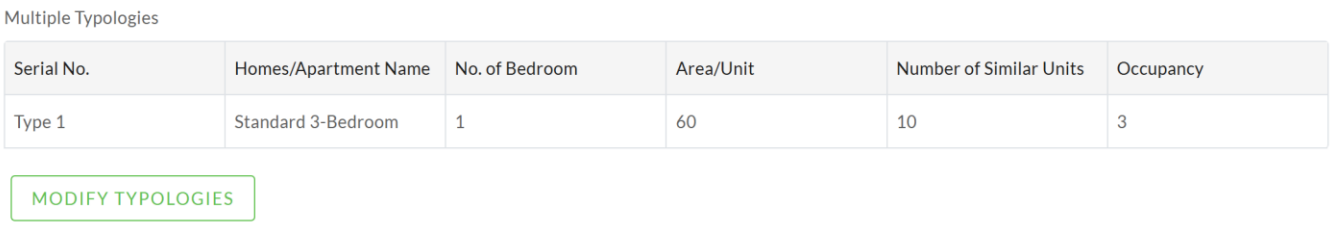


Figure 15: Multiple typologies functionality available in EDGE V3.

Residential units can be classified into a single typology, such as "Type 1", if their actual area is within ±10% of the average typology area and they have the same number of occupants and bathrooms. Otherwise, the unit should be modeled separately.

To group units into a typology, the following rules must be followed:

- Use the count-weighted average of the area
- The average unit areas should be rounded to two decimal places to minimize unintended variation. For individual unit area values with decimals, round up or down to the nearest single digit after the decimal point
- Only to similar units can be grouped, meaning those with the same number of bathrooms and design occupants, and high-level characteristics such as being single-story or duplex

Note: It is possible to group units with different numbers of floors (e.g., single/duplex) in the same typology, if they meet the grouping requirements.

Exception: If a unit type consists of 5 units or fewer and the total area of these units represents less than 10% of the project's GIA, it does not need to be modeled separately. Instead, it can be grouped with the most similar unit type.

Example: Consider a residential tower with 10 floors totaling an area of 2,957m^2. The first 8 floors feature 4 apartments per floor, while the 9th and 10th floors each contain 2 duplex apartments, as shown in Table 5.

Table 5: Apartment units in a residential tower with 10 floors totaling an area of 2,957m^2.

Unit Name	Units (n)	Toilet	Occupancy	Unit Area (A) (m2)
Unit A	8	2	3	74.00
Unit B	8	3	4	83.50
Unit C	8	3	4	94.30
Unit D	8	2	4	83.50
Unit E	2	5	5	137.65

The $Weighted\ average\ area\ (m^2)$ per unit is:

$$Weighted\ average\ area\ (m^2) = \frac{n1 * A1 + n2 * A2 + n3 * A3}{n1 + n2 + n3}$$

Or

$$Weighted\ average\ area\ (m^2) = \frac{8 * 74 + 8 * 83.5 + 8 * 94.3 + 8 * 83.5 + 2 * 137.65}{8 + 8 + 8 + 8 + 2} = 87.00 \frac{\mathrm{m}^2}{\mathrm{unit}}$$

The lower bound, i.e. a 10% reduction in the $Weighted\ average\ area\ (m^2)$, is:

$$\text{Lower bound } (\mathrm{m}^2) = 90\% * 87.00 = 78.29\mathrm{m}^2$$

The upper bound, i.e. a 10% increase in the $Weighted\ average\ area\ (m^2)$, is:

$$\text{Upper bound } (\mathrm{m}^2) = 110\% * 87.00 = 95.69\mathrm{m}^2$$

Table 6 shows the final typology grouping. Units B and C can be grouped together because they have a similar number of toilets and occupants, and their areas fall within the acceptable range. Although Unit D meets the area conditions, it cannot be grouped with Units B and C due to its different number of toilets.

Units A and E are not similar to Units B, C, and D. However, the exception allows Unit E (which represents less than 10% of the total GIA) to be combined with the most similar typology in terms of the number of toilets and occupancy. Finally, Unit A must be grouped into its own typology.

Table 6: Final typology grouping using the area lower and upper method with exception.

Unit Name	Units (n)	Toilet	Occupancy	Unit Area (A) (m2)	Typology	Justification
Unit A	8	2	3	74.00	1	Area outside the lower and upper bounds. Total area higher than 10% of the GIA.
Unit B	8	3	4	83.50	2	Similar number of toilets and occupants to Unit C. Area within the lower and upper bounds.
Unit C	8	3	4	94.30	2	Similar number of toilets and occupants to Unit B. Area within the lower and upper bounds.
Unit D	8	2	4	83.50	3	Not similar by toilets number to Unit B and C Total area higher than 10% of the GIA.
Unit E	2	5	5	167.65	2	Total area lower than 10% of the GIA. Assigned to the most similar typology (Unit B and C) by exception.

Annex 2: Core & Shell Measures

Savings from measures Table 7 can be passed onto tenants if a tenant fit-out-guide is provided. Even if the guide mandates higher performance standards, savings must be capped to the ones indicated in the table.

Table 7: Allowable improved values when passed to tenants in Core & Shell projects by category.

		Offices	Education	Healthcare	Retail	Mixed Use	Industrial
EEM13	***Cooling System Efficiency***	The minimum efficiency required in ASHRAE 90.1-2016 or local code for a given cooling equipment type and capacity					
EEM16	***Space Heating System Efficiency***	The minimum efficiency required in ASHRAE 90.1-2016 or local code for a given heating equipment type and capacity					
EEM18	***Domestic Hot Water (DHW) System***	Base Case					The min. efficiency required in ASHRAE 90.1-2016 or local code for a given hot water equipment type and capacity
EEM22	***Efficient Lighting for Internal Areas***	Up to of 90lm/W					Up to of 70lm/W
WEM01	***Water-efficient Showerheads***	7 L/min or higher					
WEM02	***Water-efficient Faucets for all Bathrooms***	5 L/min or higher					
WEM04	***Efficient Water Closets for All Bathrooms***	No less than 5 L/flush or equivalent.					
WEM08	***Water-efficient Faucets for Kitchen Sinks***	7 L/min or higher	Up to 8 L/min or higher				
MEM03	***Floor Finish***	Any value specified in the legally binding contract					

Annex 3: Unfinished/Partially Finished Residential Buildings

The improved case values in Table 8 may apply to residential typologies (Homes & Apartments) provided that a user manual is supplied.

Table 8: Improved case values for unfinished or partially finished projects per measure.

	Measure	Homes & Apartments
EEM13	***Cooling System Efficiency***	Base Case
EEM16	***Space Heating System Efficiency***	Base Case
EEM18	***Domestic Hot Water (DHW) System***	Base Case
EEM22	***Efficient Lighting for Internal Areas***	Base Case
WEM01	***Water-efficient Showerheads***	Improved case inc. penalty factor
WEM02	***Water-efficient Faucets for all Bathrooms***	Improved case inc. penalty factor
WEM04	***Efficient Water Closets for All Bathrooms***	Improved case inc. penalty factor
WEM08	***Water-efficient Faucets for Kitchen Sinks***	Improved case inc. penalty factor
MEM03	***Floor Finish***	Savings may be claimed

For water efficiency measures (WEM), please consult the *Minimum Water Fixtures for Residential Units* section for information on how to calculate the **improved case including the penalty factor**.

Annex 4: EU Taxonomy Technical Alignment

This appendix outlines our current understanding of the EU Taxonomy requirements and can serve as a guide for achieving technical alignment that meets or exceeds these criteria.

Project teams aiming to align with the EU Taxonomy may need to fulfill additional requirements, such as extra disclosure obligations, optional measures, Primary Energy Demand (PED) targets, and actions beyond the scope of the EDGE V3 certification standard. Those seeking to align with these guidelines should always verify alignment with the relevant authorities and assume the content of this section as a recommendation.

Substantial Contribution Technical Alignment

New Construction

Table 9 shows the proposed substantial contribution technical alignment between EU Taxonomy and EDGE requirements for new construction.

Table 9: Proposed substantial contribution technical alignment between EU taxonomy and EDGE for new construction.

EU Taxonomy criteria	EDGE V3 Requirements
The Primary Energy Demand (PED), defining the energy performance of the building resulting from the construction, is at least 10 % lower than the threshold set for the nearly zero-energy building (NZEB) requirements in national measures implementing Directive 2010/31/EU of the European Parliament and of the Council. The energy performance is certified using an as-built Energy Performance Certificate (EPC).	**Inside the EU:** The Primary Energy Demand of the EDGE Advanced/Certified *subproject* must be at least 10% lower than the threshold set for nearly zero-energy buildings (NZEB). **Outside the EU:** *EDGE Advanced* certification. No fossil fuels used on-site for operational energy with all necessary infrastructure for full future e-mobility.
For buildings larger than 5,000 m2, upon completion, the building resulting from the construction undergoes testing for airtightness and thermal integrity, and any deviation in the levels of performance set at the design stage or defects in the building envelope are disclosed to investors and clients. As an alternative, where robust and traceable quality control processes are in place during the construction process this is acceptable as an alternative to thermal integrity testing.	**Both Inside and Outside the EU:** *Measures:* ▪ *EEM05 Insulation of Roof,* ▪ *EEM08 Insulation of Exterior Walls,* ▪ *EEM10 Air Infiltration of Envelope* must be claimed and meet a minimum performance threshold. Refer to the *Required Measures and Thresholds* section.
For buildings larger than 5,000 m^2, the lifecycle Global Warming Potential of the building resulting from the construction has been calculated for each stage in the life cycle and is disclosed to investors and clients on demand.	**Both Inside and Outside the EU:** For buildings larger than 5,000 m^2, the lifecycle Global Warming Potential of the building resulting from the construction has been calculated for each stage in the life cycle and is disclosed to investors and clients on demand. Refer to the *Disclosure of Life-cycle Global Warming Potential (GWP)* section below.

Renovation of Existing Buildings

Table 10 shows the proposed substantial contribution technical alignment between EU Taxonomy and EDGE requirements for renovation of existing buildings.

Table 10: Proposed substantial contribution alignment between EU taxonomy and EDGE for renovation of existing buildings.

EU Taxonomy criteria	EDGE V3 Requirements
The building renovation complies with the applicable requirements for major renovations. Alternatively, it leads to a reduction of primary energy demand (PED) of at least 30% in a period no longer than three years.	**Inside the EU:** The building renovation results in a verified reduction of at least 30% in the primary energy demand or operational emissions (measured in $kgCO_2e$) for the *EDGE Advanced/Certified subproject* or equivalent[3]. **Outside the EU:** EDGE Advanced certification or equivalent[3].

Acquisition and Ownership of Buildings

Table 11 shows the proposed technical alignment between EU Taxonomy and EDGE requirements for Acquisition and ownership of buildings:

Table 11: Proposed alignment between EU taxonomy and EDGE for Acquisition and ownership of buildings.

EU Taxonomy criteria	EDGE V3 Requirements
For buildings built before 31 December 2020, the building has at least an Energy Performance Certificate (EPC) class A. As an alternative, the building is within the top 15% of the national or regional building stock expressed as operational Primary Energy Demand (PED) and demonstrated by adequate evidence, which at least compares the performance of the relevant asset to the performance of the national or regional stock built before 31 December 2020 and at least distinguishes be-tween residential and non-residential buildings.	**Inside the EU:** The primary energy demand must be at least 15% lower than the threshold set for nearly zero-energy buildings (NZEB). **Outside the EU:** EDGE Advanced certification or equivalent[3].
For buildings built after 31 December 2020, the building meets the criteria specified in Section 7.1 of the Annex that are relevant at the time of the acquisition. (New Buildings Criteria apply)	**Both Inside and Outside the EU:** New Buildings Criteria apply.
Where the building is a large non-residential building (with an effective rated output for heating systems, systems for combined space heating and ventilation, air-conditioning systems or systems for combined air conditioning and ventilation of over 290 kW) it is efficiently operated through energy performance monitoring and assessment.	**Both Inside and Outside the EU:** **For non-residential buildings**: *EEM30 Submeters for Heating and/or Cooling Systems* and *EEM31 Smart Meters for Energy is mandatory* measures must be claimed with minimum performance requirements. Refer to the *Required Measures and Thresholds* section below.

Do Not Significant Harm (DNSH) Technical Alignment

For the *DNSH - Climate Adaptation* category, the IFC's Building Resilience Index[4] is proposed as a compliant alternative. The *DNSH - Sustainable Use and Protection of Water and Marine Resources* category is partially addressed with certain water measures needing to meet minimum performance standards. Other *DNSH* categories are not fully assessed by EDGE V3, so it is recommended to seek alternative methods for compliance.

Table 12: DNSH alignment with EDGE V3.

Category	New Construction	Renovation of Existing Buildings	Acquisition and ownership of buildings
DNSH - Climate adaptation	Verified Building Resilience Index (BRI) assessment achieving minimum B level is proposed.	Verified Building Resilience Index (BRI) assessment achieving minimum B level is proposed.	Verified Building Resilience Index (BRI) assessment achieving minimum B level is proposed.
DNSH - Sustainable Use and Protection of Water and Marine Resources	Certain water measures must be claimed with minimum performance requirements. Refer to the *Required Measures and Thresholds* section below. The Impact from the construction site is not covered.	Certain water measures must be claimed with minimum performance requirements. Refer to the *Required Measures and Thresholds* section below.	N/A.
DNSH - Transition to a Circular Economy	Not Covered.	Not Covered.	N/A.
DNSH - Pollution Prevention and Control	Not Covered.	Not Covered.	N/A.
DNSH - Protection and Restoration of Biodiversity and Ecosystems	Not Covered.	N/A.	N/A.

Note that circularity calculations and other DHSH categories will be likely included in future versions of EDGE.

[4] Building Resilience Index: https://www.resilienceindex.org/

Required Measures and Thresholds

Table 13 outlines the minimum performance requirements and measures needed for EU Taxonomy Technical Alignment, as well as the specific situations in which they apply.

Table 13: Minimum performance requirements in measures required for EU Taxonomy Technical alignment.

Measure	Applicability	Minimum performance
EEM05 Insulation of Roof	New Construction.	0.49 W/m^{2}K.
EEM08 Insulation of Exterior Walls	New Construction.	1.57 W/m^{2}K.
EEM10 Air Infiltration of Envelope	New Construction, in buildings larger than 5,000m^2.	Base case.
EEM30 Submeters for Heating and/or Cooling Systems	Acquisition and ownership of buildings, non-residential buildings with HVAC system over 290 kW.	The measure must be claimed.
***EEM31 Smart Meters for Energy* is mandatory**	Acquisition and ownership of buildings, non-residential buildings with HVAC system over 290 kW.	The measure must be claimed.
EEM33 Onsite Renewable Energy	New Construction.	**For Homes, and one-story industrial buildings:** minimum 60 kWh/m^2 building footprint/year. **For all other building types**: Minimum 30 kWh/m^2 building footprint/year.
WEM01 Water-efficient Showerheads	All buildings.	8 L/min.
WEM02 Water-efficient Faucets for all Bathroom	All buildings.	6 L/min.
WEM04 Efficient Water Closets for All Bathrooms	All buildings.	Maximum flush of 6 L/flush and maximum average flush volume of 3.5 L/flush.
WEM07 Water-efficient Urinal	All buildings.	1 liter/flush.
WEM08 Water-efficient Faucets for Kitchen Sinks	All buildings.	6 L/min.

Disclosure of Life-cycle Global Warming Potential (GWP)

New Constructions larger than 5,000m² must disclose the life-cycle Global Warming Potential (GWP) resulting from their construction. This requirement means that upfront carbon emissions must be calculated for Module A (cradle to key) and Module C (end of life) as defined in the RICS *Whole Life Carbon Assessment for the Built Environment* standard.

EDGE V3 currently calculates emissions from cradle to gate (A1-A3) for selected building elements[5], as shown in Table 14. Therefore, it is necessary to (1) include calculations for any missing building elements for stages A0 to A5 and Module C and (2) for those elements already included in EDGE, add the emissions for stages A0, A4, A5 and Module C.

[5]Building Element Categories: https://www.rics.org/content/dam/ricsglobal/documents/standards/Building-element-categories.xlsx

Table 14: Alignment between RICS's building element categories and measures in EDGE V3.

Category	Summary of description	Relationship with EDGE V3
0. Treatment, demolition and facilitating works	Toxic/contaminated material treatment, Demolition works, Facilitating works.	This assembly is not covered in EDGE V3.
1.1 Foundations and piling	Foundations up to top of lowest floor slabs (including insulation and waterproofing)	*MEM01 Bottom Floor Construction* + *MEM11 Floor insulation*
1.2 Basement retaining walls and lowest slab	Entire lowest floor assembly below the underside of screed or lowest floor slab. Slabs within the basement box. Basement retaining walls (inc. vertical retaining structure, insulation and waterproofing external to the wall).	*MEM05 Exterior Walls* (below grade only) + *MEM10 Walls insulation* (below grade only).
2.1 Frame	Frame (vertical) - columns/ structural walls & braces Frame (Horizontal) - beams, joists & braces.	This assembly is not covered in EDGE V3.
2.2 Upper floors	Upper floor - structural slabs. Upper floor - non-structural slabs.	*MEM02 Intermediate floors.*
2.3 Roof	Roof - structural slabs Roof - non-structural slabs	*MEM04 Roof Construction.*
2.4 Stairs, ramps and safety guarding	Stairs flights excluding any final finishes but including any fire proofing. Ramps lengths excluding any final finishes but including any fire proofing. Internal and external vertical access ladders for fire escape, access or maintenance.	This assembly is not covered in EDGE V3.
2.5 External envelope	External - opaque envelope, External - full height glazing systems, External - roof finishes/coverings, External - safety systems.	*MEM05 Exterior Walls* (above grade only) + *MEM10 Walls insulation* (above grade only) + *MEM09 Roof Insulation.*
2.6 Windows and external doors	Windows - vertical, Windows - roof or horizontal, external doors.	*MEM07 Window Frames* + *MEM08 Window Glazing.*
2.7 Internal walls	Internal walls -solid, Internal walls - non-structural glazed walls, windows and vision panels, Internal doors.	*MEM06 Interior Walls.*
2.8 Internal doors	Internal doors inc. movable walls, sliding, folding doors, fire shutters and doors in glazed screens.	This assembly is not covered in EDGE V3.
3.1 Wall finishes	Render/paint, Tiles, framing and fixings, films.	This assembly is not covered in EDGE V3.
3.2 Floor finishes	Carpet/vinyl, Stone tiles, Raised access floor (RAF) pedestal/tile.	*MEM03 Floor Finish.*
3.3 Ceiling finishes	Substrate/paint, Suspended grid (ceiling system).	This assembly is not covered in EDGE V3.
4. FF&E	Loose furniture and fittings, IT, Specialist FF&E, Kitchen equipment, Audio and visual.	This assembly is not covered in EDGE V3.
5. Services/MEP	Heat source, Central cooling systems, ductwork, electrical installation, lighting fittings, communications, water and disposal, On site renewable energy generation.	This assembly is not covered in EDGE V3.
7. Works to existing buildings	Alterations, Repairs to existing buildings.	This assembly is not covered in EDGE V3.

8. Hard landscaping	Asphalt, Concrete and stone paving, Timber decking, etc.	This assembly is not covered in EDGE V3.

Primary Energy Demand (PED) for Selected End Uses

For all cases, the EU Taxonomy mandates reporting the primary energy demand for specific end uses, including heating, cooling, ventilation, domestic hot water, built-in lighting, and auxiliary energy. Therefore*, project teams* should exclude any end uses not listed above.

Next, the delivered energy for each fuel type must be converted to primary energy demand (PED). This conversion should focus solely on the specified end uses. The spreadsheet linked below can assist in calculating PED from EDGE outputs: https://epb.center/support/documents/spreadsheet-exported-energy-explained/

If the relevant EU country or government authority has not specified primary energy weighting factors for the building's location, the factors from Appendix B in ISO 52000-1:2017 can be used, see Table 15.

Table 15: Weighting factors (based on gross or net calorific value). From ISO 52000-1:2017, Appendix B.

Energy carrier Delivered from distant		f_{Pnren}	f_{Pren}	f_{Ptot}	KCO_2e (g/kW h)
Fossil fuels	Solid	1.1	0	1.1	360
	Liquid	1.1	0	1.1	290
	Gaseous	1.1	0	1.1	220
Electricity		2.3	0.2	2.5	420
Delivered from nearby					
District heating		1.3	0	1.3	260
District cooling		1.3	0	1.3	260
Delivered from on-site					
Solar	PV electricity	0	1	1	0
	Thermal	0	1	1	0
Environment	Geo-, aero-, hydrothermal	0	1	1	0
Exported					
Electricity	To the grid	2.3	0.2	2.5	420
	To non EPB uses	2.3	0.2	2.5	420

Similarly, if not specified by the EU country or government authority, the following k_{exp} factors, obtained from Appendix B in ISO 52000-1:2017, may be used.

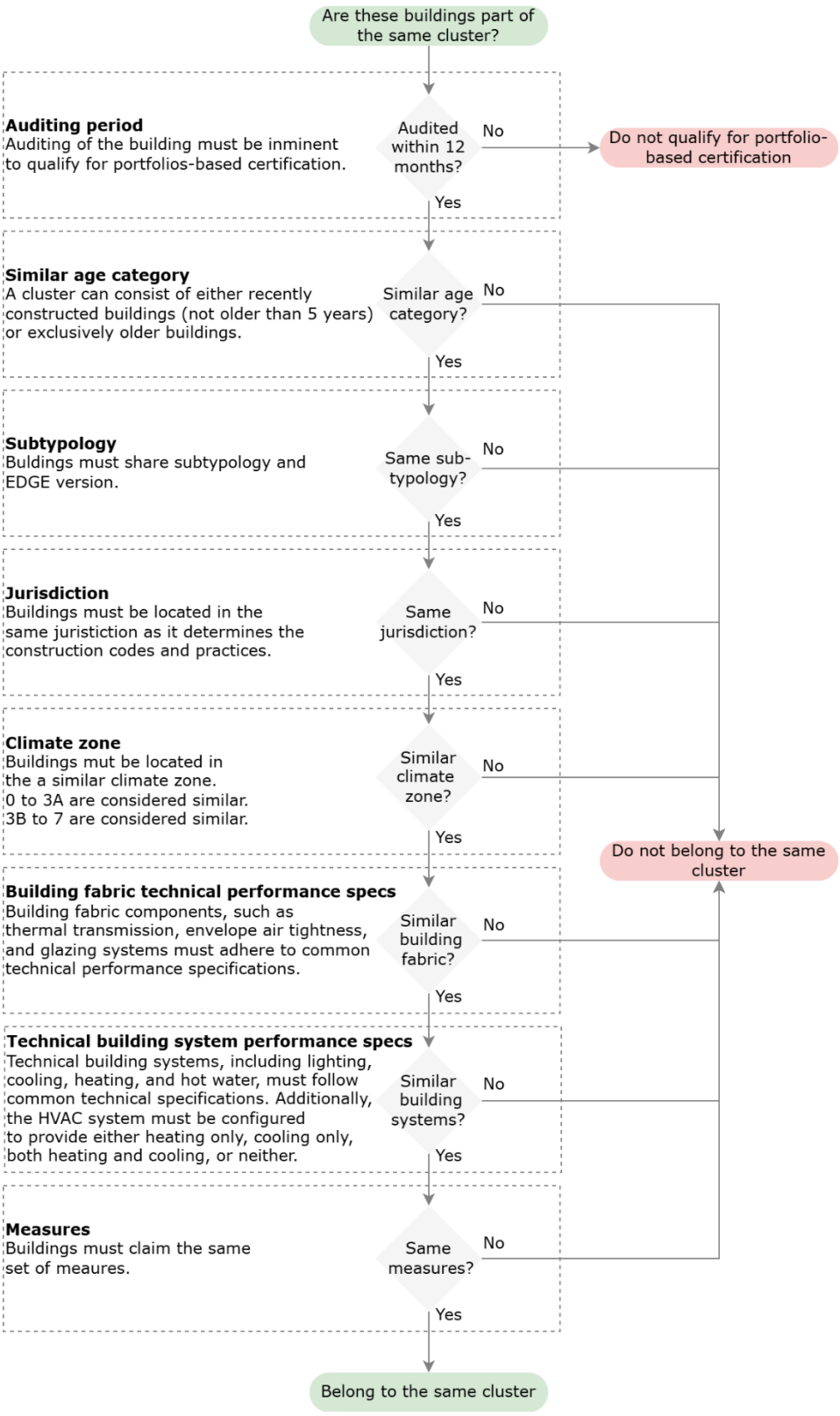
Table 16: kexp-factor.

Description	Value
k_{exp} that is used to control which part of the exported energy is included in the energy performance of the building	1

Normative References

1. European Commission. (2023). REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS. EUR-Lex. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52023DC0650#document3

Annex 5: Portfolio Clustering Workflow



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