



[www.edgebuildings.com](http://www.edgebuildings.com)

# EDGE USER GUIDE

Part 2

- Design Tab

Version 3

## Contents

Introduction.....	4
Glossary .....	5
Building Type .....	6
Documentation Submission .....	12
Location .....	13
Country.....	13
City.....	13
Project Detail .....	13
Subproject Detail .....	15
Subproject address .....	16
Documentation Submission .....	16
Building Data .....	17
Typology: Homes & Apartments .....	17
Single Typology.....	17
Multiple Typologies .....	17
Typology: Serviced Apartments, Hotels & Resorts.....	18
Typology: Retail .....	19
Typology: Industrial.....	19
Typology: Office & Education.....	20
Typology: Healthcare.....	21
Typology: Mixed Use .....	21
Documentation Submission .....	22
Area & Loads Breakdown .....	23
Common Data Points Across All Typologies .....	23
Default (Areas).....	23
Water End Uses .....	23
Description of Areas for Typology: Serviced Apartments .....	24
Description of Areas for Typology: Hotels & Resorts .....	24
Description of Areas for Typology: Retail.....	24
Description of Areas for Sub Typology: Department Store.....	24
Description of Areas for Sub Typology: Shopping Mall .....	25
Description of Areas for Sub Typology: Supermarket .....	25

Description of Areas for Sub Typology: Small Food Retail .....	26
Description of Areas for Sub Typology: Non-Food Big Box Retail .....	26
Description of Areas for Typology: Industrial.....	26
Description of Areas for Sub Typology: Light Industry .....	26
Description of Areas for Sub Typology: Warehouse.....	27
Description of Areas for Typology: Office .....	27
Description of Areas for Typology: Healthcare .....	28
Description of Areas for Sub Typology: Nursing Home .....	28
Description of Areas for Sub Typology: Private Hospital.....	28
Description of Areas for Sub Typology: Public Hospital .....	29
Description of Areas for Sub Typology: Multi-Specialty Hospital.....	29
Description of Areas for Sub Typology: Clinics .....	30
Description of Areas for Sub Typology: Diagnostic Center.....	30
Description of Areas for Sub Typology: Teaching Hospital .....	30
Description of Areas for Sub Typology: Eye Hospital .....	31
Description of Areas for Sub Typology: Dental Hospital .....	31
Description of Areas for Typology: Education.....	32
Description of Areas for Sub Typology: Preschool .....	32
Description of Areas for Sub Typology: School .....	32
Description of Areas for Sub Typology: University.....	33
Description of Areas for Sub Typology: Sports Facilities .....	33
Description of Areas for Sub Typology: Other Educational Facilities.....	33
Description of Areas for Typology: Mixed Use .....	34
Detailed Loads Inputs .....	34
Kitchen & Food Prep Loads Inputs .....	38
Documentation Submission .....	39
Building Dimensions .....	40
Default Building Length .....	40
Documentation Submission .....	40
Building HVAC System .....	41
Simplified Inputs.....	41
Detailed Inputs .....	41
Applicable Baseline.....	41

Does the Building Design Include Purchased Chilled Water and Heating supply (District Cooling or Heating)?	41
Documentation Submission .....	41
Fuel Usage .....	42
Fuel Usage .....	42
CO2 Emissions Factor .....	42
Cost Input .....	42
Documentation Submission .....	42
Climate Data .....	43
General climate information .....	43
Temperature.....	43
Relative humidity.....	43
Wind .....	43
Documentation Submission .....	43
Annex 1: Sampling Methodology .....	44

## 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 EDGE buildings certification process for version 3.

In these documents, "Must" and "Shall" are used to prescribe obligatory actions. "Should" implies a recommendation, 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 target group for this document are project teams, EDGE experts, EDGE auditors, EDGE certifiers and anyone interested in learning more about the certification.

The **Part 2 – User Guide Design Tab** offers detailed instructions for completing each subsection within the design tab of the EDGE V3 App. It also delivers information pertinent to all the different building classifications, sub-classifications, and fields that require user input when setting up the base case scenario. Moreover, the guide includes advice on how to submit documentation for each specific subsection.

From January 1<sup>st</sup>, 2025, this document invalidates and substitutes the DESIGN PAGE GUIDANCE section in EDGE Version 3.0.a.

Table 1 shows the relative position of this document within the set of EDGE user guides.

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

Module	Overarching	Design	Energy	Water	Materials	Operations
<b>App User Guides</b>	Part 1 – Building Certification Guidance	<b>Part 2 - User Guide - Design Tab</b>	Part 3 – User Guide - Energy Measures	Part 4 – User Guide - Water Measures	Part 5 – User Guide - Materials Measures	Part 6 – User Guide Operations
<b>Building Certification Guidance</b>						
<b>Operations Certification Guidance</b>						
<b>Auditor Guidance</b>		Part 8 – Auditor Guidance				
<b>Methodology</b>	For future release					
<b>Homes Prescriptive Certification Guidance</b>	Check country-specific documentation					
<p>Note 1: The shaded modules are not applicable.</p> <p>Note 2: All guidance and user guide documents are complimentary information to the EDGE protocol documents.</p> <p>Note 3: In the case of any discrepancy, the EDGE protocol document takes precedence</p>						

To share feedback with the EDGE team, please contact [edge@ifc.org](mailto:edge@ifc.org).

## Glossary

ASHRAE	American Society of Heating Refrigerating and Air-conditioning Engineers
CIBSE	Chartered Institution of Building Services Engineers
COP	Coefficient of Performance
EDGE	Excellence in Design for Greater Efficiencies
EPW	Energy Plus Weather File
GIA	Gross Internal Area
HVAC	Heating, Ventilation and Air-conditioning
IEA	International Energy Agency
IFC	International Finance Corporation
IFI	International Financial Institution
ISO	International Organization for Standardization
TRY	Test Reference Year
UNFCCC	United Nations Framework Convention on Climate Change
WWR	Window-to-Wall Ratio

## Building Type

EDGE includes the primary building typologies and associated sub typologies, as per the description below. If the project team is modeling a *building* that is not on the list, select the closest and confirm with the EDGE Certification Provider.

### Building Typology & Sub-typology

#### A. Typology: Homes

Typically used for a single *building* for one family unit. Examples include single-family homes or villas. Semi-detached (see Figure 1) and townhouses may also be considered under the Homes typology. They may be single unit *buildings*, or multiple units that are part of a development. The homes typology certification considers all amenities dedicated to the home unit; i.e. common amenities are not included. Homes typology will have one EDGE certificate issued per unit.



Figure 1: Semidetached homes shall be modeled as homes.

For developer provision of installations in partially finished homes, refer to *Part 1 – Building Certification Guidance, Annex 3*.

#### **Sub typology: Low, Middle & High Income**

The income categories are determined according to each country's socio-economic classifications. They shall be categorized by housing price and/or targeted audience. Any home that obtains any type of subsidy or is part of a social housing program may be considered low-income.

Note: Sub-typology Low Income in South Africa is referred to as Subsidized/Gap.

#### B. Typology: Apartments

Typically used for a single *building* with multiple family units. Apartments typologies would share common amenities, such as corridors, elevators, swimming pool and landscape. Apartment typology will have one EDGE certificate issued per unit in the *subproject*.



Figure 2: A sample apartment building with shared corridors located in South Africa.

For developer provision of installations in partially finished apartments, refer to *Part 1 – Building Certification Guidance, Annex 3*.

#### **Sub typology: Low, Middle & High Income**

Similar to Homes typology, the income categories are determined according to each country's socio-economic classifications. They shall be categorized by housing price and/or targeted audience. Any home that obtains any type of subsidy or is part of a social housing program may be considered low-income.

Note: Sub-typology Low Income in South Africa is referred to as Subsidized/Gap

#### **C. Serviced Apartments**

Typically used for *buildings* with non-residential long-term stay, i.e. the average stay is longer than 30 days. Hostels for long-term stays (e.g., student accommodations) may be considered under the 'Serviced Apartments' typology in this case. Serviced apartment typology will have one EDGE certificate issued for the entire *building*.

#### **Sub typology: Serviced Apartment**

Same as the Serviced Apartment typology description.

#### **D. Hotel**

Typically used for *buildings* with non-residential short-term stay, i.e. the average stay is shorter than 30 days, e.g., tourist hotel accommodation.

#### **Sub typology: 1-5 Stars**

The owner shall determine the Hotel's star rating. The selected hotel star rating will determine the assumptions made for the baseline preparation. This includes typical specifications, facilities provided, and room sizes.

When assessing a hostel under the hotel typology, 1 star shall be selected.



## E. Resorts

Typically, it refers to a hotel with facilities that include full-service accommodations and amenities and are spread across multiple *buildings*.

The resorts typology typically involves merging multiple *buildings* into one *subproject*, compliance with *Part 1 – Building Certification Guidance, Non-Typical EDGE Projects, Grouping Multiple Buildings into One Subproject* is required in such cases.



Figure 3: A rendered view of a sample resort with multiple buildings of similar height in Viet Nam.

### Sub typology: 1-5 Stars

The owner shall determine the Resort’s star rating. The selected hotel star rating will determine the assumptions made for the baseline preparation. This includes typical specifications, facilities provided, and room sizes.

## F. Retail

Retail typically refers to properties used to market and sell consumer goods and services. This may encompass a wide range of retail activities, such as stores, markets, shopping malls, and showrooms. Customer-facing businesses, e.g., retail banks, may be part of this typology. Retail *buildings* in EDGE may be owner-occupied and/or Core & Shell.

The retail typology typically involves merging multiple buildings. In such cases compliance with *Part 1 – Building Certification Guidance, Non-Typical EDGE Projects, Grouping Multiple Buildings into One Subproject* is required.

Refer to *Part 1 – Building Certification Guidance, Annex 2* for Core and Shell guidance for Retail typology.

### Sub typology: Department Store

Retail *buildings* predominantly with a major store carrying a range of merchandise/lines of products.

### Sub typology: Shopping Mall

Retail *buildings* comprising of multiple tenant types such as anchor tenants, line stores, restaurants, food court, etc.

**Sub typology: Supermarket**

Retail *buildings* with supermarket/grocery stores.

**Sub typology: Small Food Retail**

Retail *buildings* specifically meant for food and beverages that can be part of a *building* or a standalone *building*. E.g. coffee or restaurant chains.

**Sub typology: Non-food Big Box Retail**

Retail *buildings* with a large footprint, similar to a department store, selling a limited range of products, such as a furniture store or a hardware store.

**G. Industrial**

Refers to industrial and/or warehouse *buildings*. Note that the scope of EDGE is limited to *buildings* and does not cover the industrial park development.

For all new and existing *buildings* in this typology, the plug and equipment loads under the detailed load inputs table and process water generally must be filled in. For detailed guidance on industrial *buildings*, refer to *Part 1 – Building Certification Guidance, Non-Typical EDGE Projects, Industrial buildings* and the *Detailed Loads Inputs* section.

Process Water	Process Water
No	Yes <span style="float: right;">▼</span>
Water Use (Lts/Day)	

Figure 4: Process water data input in the design tab.

Industrial *buildings* in EDGE may be owner-occupied and/or Core & Shell *projects*.

For Core & Shell guidance on industrial typology, refer to *Part 1 – Building Certification Guidance, Annex 2*.

**Sub typology: Light Industry**

Light industry *buildings* include processing function (e.g., textile processing plants) through small scale facilities requiring less intensive equipment energy usage.

**Sub typology: Warehouse**

Warehouse *buildings* are large *buildings* where goods may be stored. They may include storage areas requiring cold and/or frozen storage.

*Buildings* with manufacturing activity cold storage may be modeled using the warehouse sub-typology.

## H. Office

The office typology is defined as a *building* or space within a *building* where business, clerical services, or professional services are conducted. This includes but is not limited to, spaces where administrative, accounting, clerical, consulting, engineering, and similar activities are carried out. Office *buildings* in EDGE may be owner-occupied and/or Core & Shell.

For Core & Shell guidance on office typology, refer to *Part 1 – Building Certification Guidance, Annex 2*.

### **Sub typology: Office**

Same as the Office typology description.

## I. Healthcare

Typically refers to *building* types in the healthcare community. Healthcare facilities may be subject to specific provisions due to their unique requirements for indoor environmental quality, including temperature and humidity control, ventilation, and filtration to ensure patient comfort, safety, and infection control.

Healthcare *buildings* in EDGE may be owner occupied and/or Core & Shell. For Core & Shell guidance on healthcare typology, refer to *Part 1 – Building Certification Guidance, Annex 2*.

### **Sub typology: Nursing Homes**

A *building* providing medical care with long term type patients.

### **Sub typology: Private Hospital**

A hospital *building* that is privately funded.

### **Sub typology: Public Hospital**

A hospital *building* that is largely government funded.

### **Sub typology: Multi-specialty Hospital**

A hospital *building* that offers a wide range of medical services.

### **Sub typology: Clinics**

A medical *building* that sees patients who would not require overnight stays.

### **Sub typology: Diagnostic Center**

A medical *building* with specialized equipment for diagnostic services.

### **Sub typology: Teaching Hospital**

A hospital *building* or medical center that provides medical education and training to health professionals.

### **Sub typology: Eye Hospital**

A hospital *building* specializing in disorders of the eye.

**Sub typology: Dental Hospital**

A hospital *building* specializing in dental services.

**J. Education**

Typically refers to *buildings* used for educational purposes. *Buildings* such as museums may be modeled under the education typology. For campus-type *buildings* under the same *subproject*, compliance with *Part 1 – Building Certification Guidance, Non-Typical EDGE Projects, Grouping Multiple Buildings into One Subproject* is required.



Figure 5: Multiple buildings in campus type of projects may be combined into one subproject if they meet the grouping conditions.

**Sub typology: Preschool**

Pre-elementary educational *buildings*.

**Sub typology: School**

Education *buildings* dedicated to elementary education.

**Sub typology: University**

Education *buildings* dedicated to higher education.

**Sub typology: Sports Facilities**

*Buildings* with the primary purpose of being a sports facility.

**Sub typology: Other Educational Facilities**

Use this sub typology for *buildings* used as museums, religious places, etc.

## K. Mixed Use

Mixed Use typology may be used in *buildings* that include more than one of the typologies defined above when they fall within the same category as defined in Table 2.

Table 2: Category for Mixed Use (Self Defined) typologies.

Category	Typologies covered
Guest Accommodation	Serviced Apartment, Hotel, Resort
Commercial	Retail, Office, Healthcare, Education

A *building* modeled using mixed use typology must follow the requirements described in *Part 1 – Building Certification Guidance, Non-Typical EDGE Projects, Grouping Multiple Buildings into One Subproject* (see Figure 6). When using the Mixed Use typology, the project team is only issued one certificate for the entire *Building* and may have a stricter base case when computing savings compared to dedicated typologies.

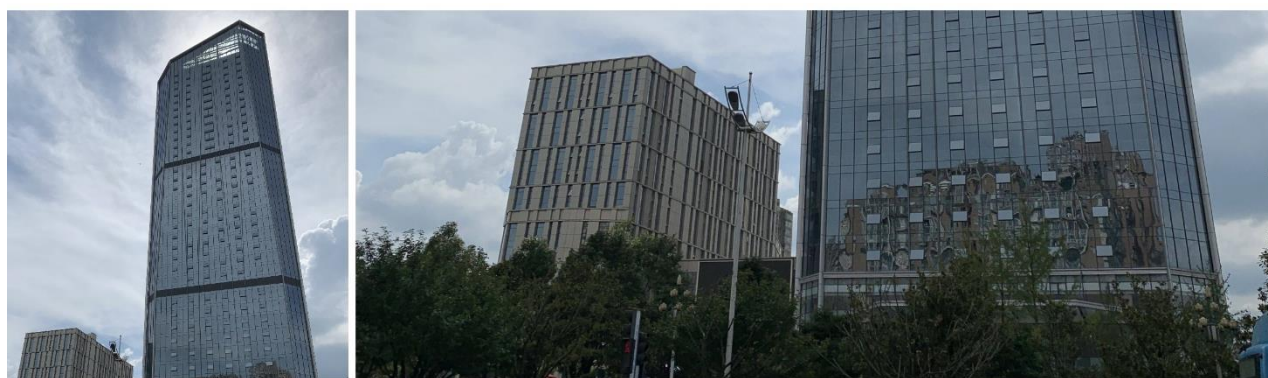


Figure 6: A mixed use development in China. Due to building height differences, the project should be modeled in at least two subprojects. Furthermore, guest accommodation sections shall be separated from commercial ones.

Industrial *buildings*, e.g., warehouse or light industry, cannot be part of Mixed Use and shall be modeled separately, refer to *Part 1 – Building Certification Guidance, Non-Typical EDGE Projects, Industrial Buildings* for guidance on Industrial typologies.

### Sub typology: Self Defined

Same as the Mixed Use typology description.

### Documentation Submission

- Project teams must provide a brief description of the *subproject* typology and sub typology.
- For project teams modeling under mixed use typology, a narrative with details on how the particular typology/sub-typology that was selected, is required.



## Location

### Country

The country in which the *subproject* is located. EDGE uses the list of countries from the World Bank Country and Lending Groups<sup>1</sup>.

### City

This refers to the city in which the *subproject* is located.

For countries or cities not currently represented in EDGE, users should choose the nearest city with an identical climate zone. The project team shall justify the selection by providing climate data for the selected and missing locations to validate/verify the selection.

The project team cannot change location information once the *project* has been registered. Please contact your Certification Provider if a correction is needed.

## Project Detail

A *project* is defined as the whole *building* or development submitted for EDGE certification with the same certifier and owner. For a detailed definition, refer to *Part 1 – EDGE Building Certification Guidance, EDGE Certification*. For example, a *project* may be a residential *Building* with two towers, a mixed-use *Building* with offices and retail space, multiple *buildings* with the same specifications in a city or country or a portfolio certification. The information in the Project section in EDGE is the top-level information that applies to the whole *project*.

This section contains the top-level information about the *project*, such as the owner's name and contact information, and is shared across a *project's subprojects*. Changes to the Project Details section are automatically reflected in *subproject* files. This section must be completed to submit the *project* for audit and certification.

The fields with asterisk \* are mandatory.

- **Project Name\*** – The name of the development. Note that this is a required field that serves as the *project* identifier. To change the Project Name once saved, navigate to the Design tab and select File > Rename. Whenever the *project* is in the project team's possession, the option to rename is available.
- **Number of Distinct Buildings** – The number of physical *buildings* that comprise the whole *project*. This field is part of the *project* description that helps an auditor or reviewer understand the physical makeup of a *project*. This field helps account for the “number of buildings” certified by EDGE in a client's or auditor's portfolio. This value will be 1 for a single *building* or towers with a shared podium level. The value in this field is for information purposes only and is intended to help visualize the *building* during the quotation and certification process. The value does not get multiplied by the GIA, unlike the “Subproject Multiplier for the Project” (see the description of that field below under *subproject* Details).
- **Project Owner Name** – The name of the key contact from the company/organization that commissioned the EDGE assessment.

---

<sup>1</sup> World Bank Country and Lending Groups: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>

- **Project Owner Email** – The email address of the key contact from the company/organization that commissioned the EDGE assessment.
- **Address Line 1** – Primary street address of the *project*.
- **Address Line 2** – Any additional details for the street address, such as the *building* number.
- **City** – The city where the *project* is located.
- **State/Province** – The state or province where the *project* is located.
- **Postal Code** – The postal code where the *project* is located (if applicable).
- **Country** – The country where the *project* is located.
- **Project Owner Phone** – The phone number of the key contact from the company/organization that commissioned the EDGE assessment.
- **Do you intend to certify?\*** – Select “Yes”, “No”, or “Not Sure” to indicate your intent regarding certification of the *subproject*.
- **Share with Investor(s) or Bank(s)?\*** - Select “Yes” or “No” to indicate preference. If a bank is interested in financing *projects* in the country, IFC may share a summary of the *project* and developer contact information with the bank. The bank may contact the developer directly.
- **Is this project created for training purpose?\*** - Select Yes, or No. Selecting Yes will disable the assessment from applying for certification.
- **Number of EDGE Subproject(s) Associated** – The total number of files associated with the *project*. EDGE calculates this automatically based on the associations established by the user; therefore, this field is not editable by the user.
- **Total Project Floor Area** – The total square meters of internal area of the *project*, including any indoor parking. This is the sum of the GIA of all the associated *subprojects* within the *project*. EDGE calculates the GIA automatically based on the areas and the multipliers (explained under “Subproject Multiplier for the Project”) assigned to each *Subproject* by the user; therefore, this field is not editable by the user. See the GIA description under the “Area and Loads Breakdown” section.
- **Project Number** – This information field displays the system-assigned number for the *project*. It is not editable.
- **Upload project-level documents** – This button links to the location to upload whole *project* -level documents, for example, a site plan of the *project*.
- **Download project audit documents** – Clicking on this button downloads the complete set of *project* documents that have been uploaded thus far. Documents for individual measures are placed in their respective folders in the downloaded set. This allows project team members to access all *project* documents from one central location. This link is also used by the EDGE Auditor for project documentation review.
- **“Register” button** – The Register button appears once a *project* has been saved. EDGE now enables a whole *project* to be registered as one entity and triggers a quotation to be sent.
- **“Associated Subprojects”** – This link appears once a *project* has been saved. It expands to show all the *subprojects* associated with that *project* in addition to the *subproject* currently open in the EDGE App.

## Subproject Detail

A *subproject* is each portion of the *project* modeled individually in EDGE. For a detailed definition, refer to *Part 1 – EDGE Building Certification Guidance, EDGE Certification*. The information in the *subproject* section applies only to the portion being modeled in that file. For example, a *subproject* maybe Unit Type 1 in a residential *building*, the retail space in a mixed-use tower, or an individual location for a chain of stores.

This section contains fields associated only with the portion of the *project* being described in the current file.

- **Subproject Name\*** – The name of the *project*, or portion of the *project*, being modeled. This name will appear on the EDGE certificate, for example, “ABC Residential Towers”. This is a required field. The field remains editable until a *subproject* has been sent for audit. To change the name after a *subproject* has been sent for audit, please contact [edge@ifc.org](mailto:edge@ifc.org).
- **Building Name\*** – The name of the *building* being modeled. This field is only needed for organizational purposes. For example, it may be the house or apartment block name in Homes or the property name in a hotel *building*. This is a required field. The field remains editable until the final EDGE certificate is issued but will not appear in the certificate itself.
- **Subproject Multiplier for the Project\*** – The Multiplier represents the number of times an entire *subproject* is repeated in the *project*. For example, if a *project* has five identical warehouse *buildings* within the *project boundary*, the project team may model only one warehouse and use five as the Multiplier. If the orientation of the *buildings* in the *subproject* is not the same, the worst-case orientation shall be used.
  - Apartments: To indicate the number of units in a residential apartment *building*, use the single or multiple typologies option under *building* Data. Do not use the Multiplier option.
  - Homes: To indicate the number of homes in a residential development, use the field “No. of Homes” under *building* Data. Do not use the Multiplier option.

Note: To find the worst-case orientation, the project team shall change the *building* dimensions to represent the *Building* orientation rotated by 90 degrees for four orientations and select the one with the worst improved case %.

- **Certification Stage\*** – The stage of certification of the *project*. Enter “Preliminary” for *projects* in the design stage of new construction or renovation. Enter “Post-Construction” for *projects* that have completed construction and are ready for the final verification phase of certification for new construction or renovation. For existing *buildings* applying for certification, “post-Construction” is the default from the very beginning of the certification process, regardless of the length of time elapsed since construction. For example, an existing *project* built one month or ten years ago would indicate “post-construction”. This is a required field.
- **Subproject Type** – The stage in the lifecycle of the *building*. “New Building” is the default and indicates new construction. “Existing Building” must be selected for existing *buildings* applying for EDGE Certification, with no renovation work involved. “Retrofit” must be selected for existing *buildings* applying for EDGE Certification with renovations. For *projects* that are existing *buildings* with a newly built extension, “New Building” must be selected.
- **Year of Construction** – This field only applies to Existing *Buildings* and Retrofits. Enter the year the *project* was completed, that is, the year the *project* received the occupancy permit. If the *project* was completed before the earliest year available in EDGE, select the earliest year available and add a note in the Project Narrative section.



## Subproject address

This is the address that will appear on the EDGE certificate. Note: The *subproject* address may or may not be the same as the *project's* Address. For example, if a *project* has *subprojects* in several locations around a city, each *subproject* may have its own address.

- **Address Line 1\*** – Primary street address of the *subproject*. This is a required field.
- **Address Line 2** – Any additional details for the street address, such as the *building* number
- **City\*** – The city where the *subproject* is located. This is a required field.
- **State/Province** – The state or province where the *subproject* is located.
- **Postal Code** – The postal code where the *subproject* is located, if applicable.
- **Country\*** – The country where the *subproject* is located. This is a required field.
- **Status** – The status of the *project* lifecycle. For example, self-review, registered etc.
- **Auditor** – The name of the Auditor assigned to the *project*.
- **Certifier** – The Certification Provider for the *project*.
- **File Number** – The system-assigned number for the unique *subproject* file in EDGE (not editable). The file number shall be used when enquiring about an issue, especially in *projects* with multiple *subprojects*.

## Documentation Submission

- Project teams shall provide government-issued documentation that proves ownership of the *building* location, e.g. title deeds or equivalent.
- For existing *buildings*, project teams shall provide proof of the *building's* age or a letter from the *building* owner stating the completion date.

## Building Data

### Typology: Homes & Apartments

#### Single Typology

Single typology may be used when all the residential units have the same number of bedrooms and the same gross internal area. Expected occupancy shall also be the same. Users shall enter the relevant details of the individual units.

- **No. of Bedrooms.** Note: Studio Apartments must indicate “0” for “number of bedrooms”.
- **Total No. of Homes or Apartments.** Number of housing units.
- **Average Home Area.** (m<sup>2</sup>) average area of the housing units.
- **No. of Floors Above/Below Grade:** A floor is considered “below grade” if more than 50% of its wall area is below ground level.
- **Floor to Floor Height:** The vertical distance between two consecutive floors or levels within the *building*, measured from the finished floor level of one floor to the finished floor level of the floor above or below it. If the *subproject* has *buildings* with different floor heights, the project team shall calculate a weighted average (based on floor area) and enter this into the EDGE App.
- **Average Roof Area/House:** The roof area in m<sup>2</sup> is used to calculate the heat transfer through the roof. This value also quantifies the roof embodied carbon in the materials section.
- **Occupancy:** (people/house). This value refers to the intended number of people per household based on the design of the residential unit.

#### Multiple Typologies

Multiple Typologies shall be used when all the residential units have different numbers of bedrooms, occupancy, or gross internal area. To group similar typologies, please refer to *Part 1 – EDGE Building Certification Guidance—Annex 1: Grouping logic for residential units for more information.*

Any common areas, such as parking, lifts, corridors, lobbies, etc., must be divided across all the units. For example, suppose an apartment block has ten units, and each apartment has 5 m<sup>2</sup> of utility room within the unit, with a common utility room of 40 m<sup>2</sup>. In that case, the project team must report a utility room of 5 + 4 = 9 m<sup>2</sup> of utility room.

Similar to the Single Typology EDGE App entry, Studio Apartments must indicate “0” for the “number of bedrooms.”

The following entries must be completed in the multiple typologies entry table. The mandatory requirements (\*) for each row must be completed before entering the next typology. If space areas are provided (m<sup>2</sup>/unit), the GIA calculated uses the sum of the nine spaces for each typology multiplied by the “number of similar units.” Hence, users shall make sure the individual spaces add up to the total area of the typology.

- **Serial No.\***
- **Homes/Apartment Name\***
- **No. of Bedroom\***
- **Area/Unit (m<sup>2</sup>/Unit)\***
- **Number of Similar Units\***
- **Occupancy: (No. of People/Unit)\***
- **Bedroom (m<sup>2</sup>/Unit)**

- **Kitchen (m<sup>2</sup>/Unit)**
- **Dining (m<sup>2</sup>/Unit)**
- **Living (m<sup>2</sup>/Unit)**
- **Toilet (m<sup>2</sup>/Unit)**
- **Utility (m<sup>2</sup>/Unit)**
- **Balcony (m<sup>2</sup>/Unit)**
- **Staircase (m<sup>2</sup>/Unit)**
- **Enclosed Garage (m<sup>2</sup>/Unit)**
- **Roof Area (m<sup>2</sup>/Unit)** Note: For homes typology only.

For *subprojects* with open plan areas, the areas for each shall be divided accordingly with an ‘imaginary line’. Each defined area in the *subprojects* will also be part of the area definition of certain measures such as the Natural Ventilation measure.

## Typology: Serviced Apartments, Hotels & Resorts

### Building Data:

- **Gross Internal Area.** This includes all areas that are enclosed within the *building(s)* measured from the center of internal walls. The GIA shall match and include all areas as entered in the Areas and Loads Breakdown Section.
- **No. of Floors Above Grade / No. of Floors Below Grade.** An integer value that represents the number of floors. In some cases, a weighted average (based on floor area) shall be calculated if the *subproject* has multiple *buildings* with different floors. However, EDGE only recognizes whole numbers for the number of floors, and the number will either be rounded up or down accordingly. For example, if the project team enters 1.4 floors, EDGE will assume one floor in all calculations. If the project team enters 1.5 floors, EDGE will recognize the *subproject* as a *building* with two floors.
- **Floor to Floor Height.** The vertical distance between two consecutive floors or levels within the *building*, measured from the finished floor level of one floor to the finished floor level of the floor above or below it. If the *subproject* has *buildings* with different floor heights, the project team shall calculate a weighted average (based on floor area) and enter this into the EDGE App.
- **Aggregate Roof Area.** This is the total roof area of the *building(s)*. It calculates heat transfer through the roof and quantifies the roof's embodied carbon in the materials section.

### Operational Details:

- **Working Days.** The number of days per week that the *building* is operating. For the current typology, the number of working days is typically 7.
- **Hours of Operation.** For hotels & Resorts, this is defined as the number of hours where the front desk is fully staffed and expecting regular guest check-ins. For serviced apartments, is the period when non-essential staff is available.
- **Occupancy Density.** This data point applies only to the Serviced Apartment typology. The project team shall consider the total occupancy and divide this by the total build up area.
- **Average Occupancy Rate.** This is based on the serviced apartment/hotel/resort occupancy or expected occupancy rate in percentage. This information may be obtained from *building* operators., if it is not available use EDGE default.

## Typology: Retail

### Building Data:

- **Gross Internal Area.** This includes all areas that are enclosed within the *building(s)* measured from the center of internal walls. The GIA shall match and include all areas as entered in the Areas and Loads Breakdown Section.
- **No. of Floors Above Grade/No. of Floors Below Grade.** An integer value that represents the number of floors. In some cases, a weighted average (based on floor area) shall be calculated if the *subproject* has multiple *buildings* with different floors. However, EDGE only recognizes whole numbers for the number of floors, and the number will either be rounded up or down accordingly. For example, if the project team enters 1.4 floors, EDGE will assume one floor in all calculations. If the project team enters 1.5 floors, EDGE will recognize the *subproject* as a *building* with two floors.
- **Floor to Floor Height.** The vertical distance between two consecutive floors or levels within the *building*, measured from the finished floor level of one floor to the finished floor level of the floor above or below it. If the *subproject* has *buildings* with different floor heights, the project team must calculate a weighted average (based on floor area) and enter this into the EDGE App.
- **Aggregate Roof Area.** This is the total roof area of the *building(s)*. It calculates heat transfer through the roof and quantifies the roof's embodied carbon in the materials section.

### Operational Details:

- **Working Days.** This is the number of operational days according to published hours. For retail, this number is typically 7 days per week, but may be reduced for specific reasons.
- **Hours of Operation.** This is the number of hours where the retail mall is open to the public for business, according to published hours.
- **Average Footfall Per Day.** This is based on the average number of people entering the *building* per day.

## Typology: Industrial

### Building Data:

- **Gross Internal Area.** This includes all areas that are enclosed within the *building(s)* measured from the center of internal walls. The GIA shall match and include all areas as entered in the Areas and Loads Breakdown Section.
- **No. of Floors Above Grade/No. of Floors Below Grade.** An integer value that represents the number of floors. In some cases, a weighted average (based on floor area) shall be calculated if the *subproject* has multiple *buildings* with different floors. However, EDGE only recognizes whole numbers for the number of floors, and the number will either be rounded up or down accordingly. For example, if the project team enters 1.4 floors, EDGE will assume one floor in all calculations. If the project team enters 1.5 floors, EDGE will recognize the *Subproject* as a *building* with two floors.
- **Floor to Floor Height.** The vertical distance between two consecutive floors or levels within the *building*, measured from the finished floor level of one floor to the finished floor level of the floor above or below it. If the *subproject* has *buildings* with different floor heights, the project team must calculate a weighted average (based on floor area) and enter this into the EDGE App.
- **Aggregate Roof Area.** This is the total roof area of the *building(s)*. It calculates heat transfer through the roof and quantifies the roof's embodied carbon in the materials section.

### Operational Details:

- **Working Days.** This is the number of days that the *building* will be operating. Please do not include days where the *building* is opened for cleaning, maintenance, etc.
- **Number of Holidays.** This is the number of days where occupant is not expected to be working.
- **Hours of Operation.** The specific time periods during which the *building* is actively functioning, and staff are present, conducting manufacturing, processing, maintenance, or related work activities. Hours whereby there will be security staff, cleaning and maintenance staff in the *building* does not fulfil the definition and must not be included in the *building's* hours of operation.
- **Occupancy Density.** Area (GIA) in m<sup>2</sup>, per person. This data point applies only to the office component of the Light Industry/Warehouse sub-typology. For detailed occupancy density, enter this in Detailed Load Inputs in the Areas & Loads Breakdown section.

### Typology: Office & Education

#### Building Data:

- **Gross Internal Area.** This includes all areas that are enclosed within the *building(s)* measured from the center of internal walls. The GIA shall match and include all areas as entered in the Areas and Loads Breakdown Section.
- **No. of Floors Above Grade/No. of Floors Below Grade.** An integer value that represents the number of floors. In some cases, a weighted average (based on floor area) shall be calculated if the *subproject* has multiple *buildings* with different floors. However, EDGE only recognizes whole numbers for the number of floors, and the number will either be rounded up or down accordingly. For example, if the project team enters 1.4 floors, EDGE will assume one floor in all calculations. If the project team enters 1.5 floors, EDGE will recognize the *subproject* as a *building* with two floors.
- **Floor to Floor Height.** The vertical distance between two consecutive floors or levels within the *building*, measured from the finished floor level of one floor to the finished floor level of the floor above or below it. If the *subproject* has *buildings* with different floor heights, the project team must calculate a weighted average (based on floor area) and enter this into the EDGE App.
- **Aggregate Roof Area.** This is the total roof area of the *building(s)*. It calculates heat transfer through the roof and quantifies the roof's embodied carbon in the materials section.

### Operational Details:

- **Working Days.** This is the number of operational days according to the *hours of operation* definition. For offices, it is generally 5 days a week.
- **Number of Holidays.** This only includes bank holidays or public holidays.
- **Hours of Operation.** For offices, it is the number of hours when the occupants exceed 25% of the nominal capacity of the *building*. For education, it is the hours when the organization is open to educational activities. Hours whereby there will be security staff, cleaning and maintenance staff in the *building* does not fulfil the definition and shall not be included in the *building's* hours of operation.
- **Occupancy Density.** The occupancy density is the number of people per unit of floor area.

## Typology: Healthcare

### Building Data:

- **Gross Internal Area.** This includes all areas that are enclosed within the *building(s)* measured from the center of internal walls. The GIA shall match and include all areas as entered in the Areas and Loads Breakdown Section.
- **No. of Floors Above Grade/No. of Floors Below Grade.** An integer value that represents the number of floors. In some cases, a weighted average (based on floor area) shall be calculated if the *subproject* has multiple *buildings* with different floors. However, EDGE only recognizes whole numbers for the number of floors, and the number will either be rounded up or down accordingly. For example, if the project team enters 1.4 floors, EDGE will assume one floor in all calculations. If the project team enters 1.5 floors, EDGE will recognize the *subproject* as a *building* with two floors.
- **Floor to Floor Height.** The vertical distance between two consecutive floors or levels within the *building*, measured from the finished floor level of one floor to the finished floor level of the floor above or below it. If the *subproject* has *buildings* with different floor heights, the project team must calculate a weighted average (based on floor area) and enter this into the EDGE App.
- **Aggregate Roof Area.** This is the total roof area of the *building(s)*. It calculates heat transfer through the roof and quantifies the roof's embodied carbon in the materials section.

### Operational Details:

- **Working Days.** This is the number of operational days. For healthcare, it is generally 7 days a week.
- **Hours of Operation.** Hours of operation is the period available for providing patient care according to published hours. Hours whereby there will be security staff, cleaning and maintenance staff in the *building* does not fulfil the definition and shall not be included in the *building's* hours of operation.
- **Occupancy Density.** The occupancy density is the number of people per unit of floor area.
- **Average Occupancy Rate.** This is the average occupancy rate of the healthcare *building*.

## Typology: Mixed Use

### Building Data:

- **Gross Internal Area.** This includes all areas that are enclosed within the *building(s)* measured from the center of internal walls. The GIA shall match and include all areas as entered in the Areas and Loads Breakdown Section.
- **No. of Floors Above Grade/No. of Floors Below Grade.** An integer value that represents the number of floors. In some cases, a weighted average (based on floor area) shall be calculated if the *subproject* has multiple *buildings* with different floors. However, EDGE only recognizes whole numbers for the number of floors, and the number will either be rounded up or down accordingly. For example, if the project team enters 1.4 floors, EDGE will assume one floor in all calculations. If the project team enters 1.5 floors, EDGE will recognize the *subproject* as a *building* with two floors.
- **Floor to Floor Height.** The vertical distance between two consecutive floors or levels within the *building*, measured from the finished floor level of one floor to the finished floor level of the floor above or below it. If the *subproject* has *buildings* with different floor heights, the project team must calculate a weighted average (based on floor area) and enter this into the EDGE App.

- **Aggregate Roof Area.** This is the total roof area of the *building(s)*. This value is used to calculate the heat transfer through the roof. This value is also to quantify the roof embodied carbon in the materials section.

#### Operational Details:

- **Working Days.** This is the number of operational days. Mixed *buildings* shall have the same working days.
- **Hours of Operation.** This is the number of hours where the normal business activities occur or as per defined in the hour operations of the typologies being combined. Mixed used *buildings* that differ more than three operational hours<sup>2</sup>, shall be submitted as separate *subprojects*.
- **Occupancy Density.** The occupancy density is the number of people per unit of floor area (GIA) given in m<sup>2</sup> per person.

#### Documentation Submission

- Architectural drawings/documentation indicating total Gross Internal Area
- Architectural drawings highlighting the roof area in m<sup>2</sup>.
- Statement from the *building* owner stating the *building's* intended operational usage.

---

<sup>2</sup> In accordance with ISO 52016-1:2017(E) – Section 6.4.2.6



## Area & Loads Breakdown

### Common Data Points Across All Typologies

#### Default (Areas)

- **Area with Exterior Lighting.** Project teams shall identify the location of all exterior areas that require lighting as part of the *project boundary*, except the external car parking area. This includes landscape lighting, outdoor feature lighting, etc. Façade lighting is excluded.
- **External Car Parking Area.** Project teams shall identify external car parking areas (i.e., parking bays and parking aisles) requiring lighting and report them using this field (from version 3.1 onwards). Street lighting is excluded.

#### Water End Uses

- **Irrigated Area.** This refers to areas that install a permanent irrigation system. Examples of irrigation systems include sprinkler systems, drip irrigation, and manual irrigation with a hose. *Subprojects* with no irrigation system or that rely on natural rainfall shall indicate 0 m<sup>2</sup> in irrigation and cannot claim water savings in measure WEM13. Irrigation systems shall comply with the requirements stated in **Part 4 – User Guide – Water Measures**.
- **Swimming Pool Type.** All *subprojects* have the option to select if pools are present on site, as well as enter options for a heated/unheated pool, indoor/outdoor pool.
- **Swimming Pool (m<sup>2</sup>).** The total area of the pool(s) in the *subproject* shall be entered in this field.
- **Car washing (YES/NO).** All *subprojects* that have the option for car washing (e.g., with taps located in common areas) must indicate “Yes”. Parking spots with dedicated water taps in residential and commercial *subprojects* qualify for car washing.
- **Washing Clothes (YES/NO).**
  - Non-Residential: “Yes” must be selected if the *building* provides a space and a connection point for a washing machine.
  - Residential: All residential *buildings* must select “Yes” whether a washing machine is provided or not.
- **Process Water (YES/NO).** Refers to the manufacturing process water or process water used by equipment (e.g., water required for medical devices used in hospitals). This does not include HVAC water, as HVAC water is already accounted for when a water-cooled chiller is part of the base case. For detailed guidance on industrial *buildings*, refer to *Part 1 – Building Certification Guidance, Non-Typical EDGE Projects, Industrial buildings*.
- **Dishwasher (YES/NO)**
  - Non-Residential: “Yes” must be selected if the *building* provides a space and a connection point for dishwasher(s) in a kitchen, pantry, or restaurant.
  - Residential projects: All residential *buildings* must select “Yes” if a dishwasher is provided, or a space and connection are provided for the purpose of installing a dishwasher. “No” may be selected if no dishwasher is provided or no space and connections are allocated for the potential installation of a dishwasher.
- **Pre-Rinse Spray Valve (YES/NO).** A pre-rinse spray valve is generally used in kitchens to remove food waste from dishes before dishwashing. It may also be used in homes without dishwashers. Project teams must select “Yes” if such a feature is installed. Select “No” if fixtures will not be procured at the time of the post-construction audit or if this is not mentioned in the tenant guidelines.



## Description of Areas for Typology: Serviced Apartments

- **Apartment Area:** Total GIA of all the apartment.
- **Lobby:** Indoor area located near the entrance of the serviced apartment.
- **Corridors:** Circulation Zone.
- **Recreational Area:** Areas used for recreational purposes.
- **Back of House:** Kitchen, laundry, linen, staff area.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Covered Car Parking Area.** This field will be discontinued in the future. Project teams should use external car parking area instead.

### Number of Units

- **Studio:** Number of studio apartment unit.
- **1 Bedroom:** Number of 1 Bedroom apartment unit(s).
- **2 Bedroom:** Number of 2 Bedroom apartment units(s).
- **3 Bedroom:** Number of 3 Bedroom apartment unit(s).
- **4 Bedroom:** Number of 4 Bedroom apartment unit(s).

## Description of Areas for Typology: Hotels & Resorts

- **Guest Rooms:** GIA of hotel rooms.
- **Restaurant & Cafeteria:** Area where food is prepared and served.
- **Bars:** Area where beverages (drinks) are served.
- **Lockers:** Location of lockers for storage of items.
- **Reception:** Indoor area located near the entrance of the *building*.
- **Lobby:** Indoor area located near the entrance of the *building*. Similar to *Reception* but with a smaller area.
- **Administrative Office:** Office area within the hotel/resort.
- **Tea & Coffee Shops:** Area where food is served with minimal food preparation is required.
- **Laundry:** Area where washing machines and dryers are located for guests.
- **Health Spa:** Facilities such as health spas and gyms shall be included within this area.
- **Linen & Store:** Storage area.
- **Kitchen:** The area is solely for food preparation and is not part of a restaurant. For example, food preparation for conference/banquet, or kitchen area for staff.
- **Corridors:** Circulation zone.
- **Conference/Banquet:** Large event hall.

## Description of Areas for Typology: Retail

### Description of Areas for Sub Typology: Department Store

- **General Sales Area:** Open area selling non-refrigerated items.
- **Electronics Area:** Area selling electronic/electrical-powered equipment or goods.
- **Food Sales:** Area selling food items. Food preparation in the sales area, if done on-site, shall be considered under “Kitchen & Food Preparation”.
- **Dry Storage:** Storage area that does not require refrigeration.
- **Cold Storage Area:** Storage area for grocery supplies that requires refrigeration at -4 °C.

- **Frozen Storage:** Storage area for grocery supplies that requires frozen refrigeration at -20 °C.
- **Bathrooms:** Toilets within the retail typology. This may or may not include areas with showers.
- **Office:** All enclosed space used for office work, including open plan or closed/private office areas.
- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Corridors & Lobby:** Circulation zone.
- **Kitchen & Food Preparation:** Refers to the following areas type:
  - a. Food Court and sitting area; and/or
  - b. Areas such as staff break rooms that have food preparation areas.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.

#### Description of Areas for Sub Typology: Shopping Mall

- **Anchor Store Area (Supermarket):** Area dedicated to a supermarket (grocer) type of tenant.
- **Anchor Store Area (Other):** Area dedicated to a non-supermarket (grocer) type of tenant.
- **Line Store Area:** The designated area or section within a retail store where products from a specific brand or product line are displayed and sold.
- **Atrium:** An open, interior, sky-lit court usually located at the center of a *building* and often surrounded by multiple stories. Consider the ground-level area only.
- **Leisure & Entertainment:** Large areas that are primarily used for leisure & entertainment-type activities. This may include areas such as movie theatres or indoor sports facilities within a mall.
- **Kitchen & Food Preparation:** Refers to the following areas type:
  - a. Food Court; and/or
  - b. Areas such as staff break rooms that have food preparation areas.
- **Dry Storage:** Storage area not requiring frequent access.
- **Bathrooms:** Toilets within the retail typology. This may or may not include areas with showers.
- **Office:** All enclosed space used for office work, including open plan or closed/private office areas.
- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Mall Area (Communal Corridors):** Circulation space/area within the mall.
- **Data Center:** A physical location that stores computing IT equipment.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.

#### Description of Areas for Sub Typology: Supermarket

- **General Sales Area:** Open area selling non-refrigerated items.
- **Refrigerated Area:** Area within a supermarket/grocery store requiring refrigeration (e.g., dairy section, etc.)
- **Frozen Section:** Area within a supermarket/grocery store requiring freezer storage at -20 °C (e.g., ice cream section, etc.).
- **Bakery:** An area that produces and sells baked goods. If the supermarket does not produce the items within the bakery, that area may be classified under “General Sales”.
- **Dry Storage:** Storage area for grocery supplies that does not require refrigeration.
- **Cold Storage Area:** Storage area for grocery supplies that requires refrigeration at -4 °C.
- **Frozen Storage:** Storage area for grocery supplies that requires frozen refrigeration at -20 °C.
- **Bathrooms:** Toilets within the retail typology. This may or may not include areas with showers.

- **Office:** All enclosed space used for office work, including open plan or closed/private office areas.
- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Kitchen & Food Preparation:** Refers to the following areas type, as applicable:
  - a. Food Court; and/or
  - b. Areas such as staff break rooms that have food preparation areas.

#### Description of Areas for Sub Typology: Small Food Retail

- **General Sales Area:** Open area selling non-refrigerated items.
- **Refrigerated Area:** Area for food that requires refrigeration.
- **Frozen Section:** Area for food requiring freezer storage at -20 °C.
- **Dry Storage:** Storage area for supplies that does not require refrigeration.
- **Cold Storage Area:** Storage area for supplies that requires refrigeration at -4 °C.
- **Bathrooms:** Toilets within the retail typology. This may or may not include areas with showers.
- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Kitchen & Food Preparation:** Refers to the following areas type, as applicable:
  - a. Restaurant Area; and/or
  - b. Areas such as staff break rooms that have food preparation areas.

#### Description of Areas for Sub Typology: Non-Food Big Box Retail

- **General Sales Area:** Open area selling non-refrigerated items.
- **Office:** All enclosed space used for office work, including open plan or closed/private office areas.
- **Corridors & Lobby:** Customer circulation zone.
- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Kitchen & Food Preparation:** Refers to the following areas type, as applicable:
  - a. Food Court; and/or
  - b. Areas such as staff break rooms that have food preparation areas.

#### Description of Areas for Typology: Industrial

##### Description of Areas for Sub Typology: Light Industry

- **Office:** All enclosed space used for office work, including open plan or closed/private office areas.
- **Receiving Area:** Working area where goods/materials are delivered to.
- **Shipping Area:** Working area where goods/materials are picked up from.
- **Production Area:** Working area during the production of a good.
- **Inventory Area:** Working area for the management of inventory.

- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Kitchen & Food Preparation:** Areas such as staff break rooms that have food preparation areas.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Cold Storage Area:** Storage area for supplies that requires refrigeration at -4 °C.

Note: In V 3.0 cold/frozen storage is calculated as cooling load. In V 3.1 it is calculated as refrigeration loads.

#### Description of Areas for Sub Typology: Warehouse

- **Office:** All enclosed space used for office work, including open plan or closed/private office areas.
- **Data Center:** A physical location that stores computing IT equipment.
- **Kitchenette:** Food preparation areas for staff/occupants.
- **Inventory Control:** Working area for management of items from stock to their destination.
- **Storage:** Storage area for goods.
- **Frozen Section:** Area for goods requiring freezer storage at -20 °C.
- **Cold Storage Area:** Storage area for supplies that requires refrigeration at -4 °C.
- **Fruit & Vegetable Storage:** Storage area for supplies that requires refrigeration at 14 °C.
- **Packaging:** Working area for packaging of items.
- **Receiving & Shipping:** Working area where goods are delivered to or picked up from.
- **Restrooms:** Toilets or Bathrooms. This may or may not include areas with showers.
- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Car Parking (Indoor):** Parking that is situated within the Gross Internal Area (GIA) and enclosed by the *building*. Parking may or may not require mechanical ventilation and shall be modeled in accordance with relevant *building* code requirements.

Note: In V 3.0 cold/frozen storage is calculated as cooling and refrigeration loads. In V 3.1 it is calculated as refrigeration loads only.

#### Description of Areas for Typology: Office

- **Open Plan Office:** An office layout where employees work in the same open space / area.
- **Private/Closed Office:** An office design layout with individual enclosed workspaces for an employee or a small number of employees.
- **Corridor:** Circulation Space for *building* users.
- **Conference:** Large rooms for meetings.
- **Data Center:** A physical location that stores computing IT equipment.
- **Lobby:** Entry circulation space.
- **Kitchen & Food Preparation:** Areas such as staff break rooms that have food preparation areas.
- **Bathrooms:** Toilets within the office typology. This may or may not include areas with showers.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Mechanical & Electrical, Store:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment. The area shall also include any storage area such as cleaning supplies storage, etc.

## Description of Areas for Typology: Healthcare

### Description of Areas for Sub Typology: Nursing Home

- **Patient Areas – General:** Ward areas for patients.
- **Patient Areas – Specialty Wards:** Ward areas for patients requiring specialized care.
- **Consultation Rooms:** An enclosed space used for consultation with patients, or a doctor’s office.
- **Office:** All enclosed space used for administrative type work (non-consultation), including open plan or closed/private office areas.
- **Corridors:** Circulation area.
- **Kitchen & Food Preparation:** Areas such as staff break rooms that have food preparation areas.
- **Food Court:** Area where food is prepared and sold within the healthcare *building*.
- **Waiting Area:** Area for visitors.
- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Data Center:** A physical location that stores computing IT equipment.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Laundry:** An area designated for a washer and/or a dryer.

### Description of Areas for Sub Typology: Private Hospital

- **Patient Areas – General:** Ward areas for patients.
- **Patient Areas – Specialty Wards:** Ward areas for patients requiring specialized care.
- **Intensive Care Units (ICUs):** Ward areas for patients for patients requiring intensive care.
- **Pre & Post Operating Rooms:** Preparation area for patient and staff prior to surgery.
- **Operating Rooms:** An enclosed space primarily used for surgeries.
- **Consultation Rooms:** An enclosed space used for consultation with patients, or a doctor’s office.
- **Therapy Rooms:** Area used for various medical treatments that may require specialized equipment.
- **Diagnostic Services:** Room with the use of specialized equipment to diagnose a medical condition. (e.g., X-Ray rooms, MRI rooms etc.).
- **Office:** All enclosed space used for administrative type work (non-consultation), including open plan or closed/private office areas.
- **Corridors:** Circulation area
- **Central Sterile Supply Department:** An area used to sterilize surgical instruments.
- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Bathrooms / Storage:** Toilets within the hospital typology. This may or may not include areas with showers. Also includes areas used for Storage.
- **Kitchen & Food Preparation:** Areas such as staff break rooms that have food preparation areas.
- **Food Court:** Area where food is prepared and sold within the healthcare *building*.
- **Laundry:** An area designated for a washer and/or a dryer.
- **Data Center:** A physical location that stores computing IT equipment.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Waiting Area:** Area for visitors.

### Description of Areas for Sub Typology: Public Hospital

- **Patient Areas – General:** Ward areas for patients.
- **Patient Areas – Specialty Wards:** Ward areas for patients requiring specialized care.
- **Intensive Care Units (ICUs):** Ward areas for patients for patients requiring intensive care.
- **Pre & Post Operating Rooms:** Preparation area for patient and staff prior to surgery.
- **Operating Rooms:** An enclosed space primarily used for surgeries.
- **Consultation Rooms:** An enclosed space used for consultation with patients, or a doctor’s office.
- **Therapy Rooms:** Area used for various medical treatments that may require specialized equipment.
- **Diagnostic Services:** Room with the use of specialized equipment to diagnose a medical condition. (e.g., X-Ray rooms, MRI rooms, etc.).
- **Office:** All enclosed space used for administrative type work (non-consultation), including open plan or closed/private office areas.
- **Corridors:** Circulation area.
- **Central Sterile Supply Department:** An area used to sterilize surgical instruments.
- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Bathrooms/Storage:** Toilets within the hospital typology. This may or may not include areas with showers. Also includes areas used for Storage.
- **Kitchen & Food Preparation:** Areas such as staff break rooms that have food preparation areas.
- **Food Court:** Area where food is prepared and sold within the healthcare *building*.
- **Laundry:** An area designated for a washer and/or a dryer.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Data Center:** A physical location that stores computing IT equipment.
- **Waiting Area:** Area for visitors.

### Description of Areas for Sub Typology: Multi-Specialty Hospital

- **Patient Areas – General:** Ward areas for patients
- **Intensive Care Units (ICUs):** Ward areas for patients for patients requiring intensive care.
- **Pre & Post Operating Rooms:** Preparation area for patient and staff prior to surgery.
- **Operating Rooms:** An enclosed space primarily used for surgeries.
- **Consultation Rooms:** An enclosed space used for consultation with patients, or a doctor’s office.
- **Therapy Rooms:** Area used for various medical treatments that may require specialized equipment.
- **Diagnostic Services:** Room with the use of specialized equipment to diagnose a medical condition. (e.g., X-Ray rooms, MRI rooms etc.).
- **Office:** All enclosed space used for administrative type work (non-consultation), including open plan or closed/private office areas.
- **Corridors:** Circulation area
- **Central Sterile Supply Department:** An area used to sterilize surgical instruments.
- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Bathrooms/Storage:** Toilets within the hospital typology. This may or may not include areas with showers. Also includes areas used for Storage.
- **Kitchen & Food Preparation:** Areas such as staff break rooms that have food preparation areas.
- **Food Court:** Area where food is prepared and sold within the healthcare *building*.



- **Laundry:** An area designated for a washer and/or a dryer.
- **Data Center:** A physical location that stores computing IT equipment.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Waiting Area:** Area for visitors.

#### Description of Areas for Sub Typology: Clinics

- **Consultation Rooms:** An enclosed space used for consultation with patients, or a doctor's office.
- **Diagnostic Services:** Room with the use of specialized equipment to diagnose a medical condition (e.g., X-Ray rooms, MRI rooms etc.).
- **Office:** All enclosed space used for administrative type work (non-consultation), including open plan or closed/private office areas.
- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Bathrooms/Storage:** Toilets within the hospital typology. This may or may not include areas with showers. Also includes areas used for Storage.
- **Waiting Area:** Area for visitors.
- **Kitchen & Food Preparation:** Areas such as staff break rooms that have food preparation areas.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Data Center:** A physical location that stores computing IT equipment.
- **Laundry:** An area designated for a washer and/or a dryer.

#### Description of Areas for Sub Typology: Diagnostic Center

- **Diagnostic Services:** Room with the use of specialized equipment to diagnose a medical condition. (e.g., X-Ray rooms, MRI rooms etc.).
- **Office:** All enclosed space used for administrative type work (non-consultation), including open plan or closed/private office areas.
- **Corridors:** Circulation area.
- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Bathrooms/Storage:** Toilets within the hospital typology. This may or may not include areas with showers. Also includes areas used for Storage.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Data Center:** A physical location that stores computing IT equipment.
- **Kitchen & Food Preparation:** Areas such as staff break rooms that have food preparation areas.
- **Waiting Area:** Area for visitors.

#### Description of Areas for Sub Typology: Teaching Hospital

- **Patient Areas – General:** Ward areas for patients
- **Patient Areas – Specialty Wards:** Ward areas for patients requiring specialized care.
- **Intensive Care Units (ICUs):** Ward areas for patients for patients requiring intensive care.
- **Pre & Post Operating Rooms:** Preparation area for patient and staff prior to surgery.
- **Operating Rooms:** An enclosed space primarily used for surgeries.

- **Consultation Rooms:** An enclosed space used for consultation with patients, or a doctor’s office.
- **Diagnostic Services:** Room with the use of specialized equipment to diagnose a medical condition. (e.g., X-Ray rooms, MRI rooms etc.).
- **Office:** All enclosed space used for administrative type work (non-consultation), including open plan or closed/private office areas.
- **Corridors:** Circulation area.
- **Central Sterile Supply Department:** An area used to sterilize surgical instruments.
- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Bathrooms/Storage:** Toilets within the hospital typology. This may or may not include areas with showers. Also includes areas used for Storage.
- **Kitchen & Food Preparation:** Areas such as staff break rooms that have food preparation areas.
- **Food Court:** Area where food is prepared and sold within the healthcare *building*.
- **Laundry:** An area designated for a washer and/or a dryer.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Data Center:** A physical location that stores computing IT equipment.
- **Waiting Area:** Area for visitors.
- **Education, Auditorium:** Large area for public gathering.

#### Description of Areas for Sub Typology: Eye Hospital

- **Patient Areas – General:** Ward areas for patients.
- **Operating Rooms:** An enclosed space primarily used for surgeries.
- **Consultation Rooms:** An enclosed space used for consultation with patients, or a doctor’s office.
- **Diagnostic Services:** Room with the use of specialized equipment to diagnose a medical condition. (e.g., X-Ray rooms, MRI rooms, etc.).
- **Corridors:** Circulation area.
- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Bathrooms/Storage:** Toilets within the hospital typology. This may or may not include areas with showers. Also includes areas used for Storage.
- **Kitchen & Food Preparation:** Areas such as staff break rooms that have food preparation areas.
- **Food Court:** Area where food is prepared and sold within the healthcare *building*.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Waiting Area:** Area for visitors.
- **Data Center:** A physical location that stores computing IT equipment.
- **Refraction:** A semi-dark room with specialized equipment.
- **Optical:** A room with specialized equipment.

#### Description of Areas for Sub Typology: Dental Hospital

- **Operating Rooms:** An enclosed space primarily used for surgeries.
- **Consultation Rooms:** An enclosed space used for consultation with patients, or a doctor’s office.
- **Diagnostic Services:** Room with the use of specialized equipment to diagnose a medical condition (e.g., X-Ray rooms, MRI rooms, etc.).



- **Corridors:** Circulation area.
- **Mechanical & Electrical:** A technical room or space in the *building* dedicated to mechanical and/or electrical and/or plumbing equipment.
- **Bathrooms/Storage:** Toilets within the hospital typology. This may or may not include areas with showers. Also includes areas used for Storage.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Data Center:** A physical location that stores computing IT equipment.
- **Waiting Area:** Area for visitors.
- **Kitchen & Food Preparation:** Areas such as staff break rooms that have food preparation areas. Food court area, as applicable, may also be included in this area.

## Description of Areas for Typology: Education

### Description of Areas for Sub Typology: Preschool

- **Classrooms:** Room whereby students are being taught.
- **Meeting Rooms:** Space for staff/teacher discussion.
- **Play Rooms:** Rooms with toys for preschoolers.
- **Office/Administration Rooms:** All enclosed space used for administrative purposes (non-teaching), including open plan or closed/private office areas.
- **Restrooms:** Toilets or bathrooms with the educational *building*. This may or may not include areas with showers.
- **Cafeteria:** Areas such as staff break rooms that have food preparation areas.
- **Corridors:** Circulation area.
- **Staff Rooms:** Areas such as staff break rooms (non-food area).
- **Other Space Types:** These may be self-defined areas by modifying detailed loads input.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.
- **Worship Places:** Religious area.

### Description of Areas for Sub Typology: School

- **Classrooms:** Room whereby students are being taught.
- **Meeting Rooms:** Space for students/teams to discuss issues and collaborate.
- **Labs:** A room used for the teaching and demonstration of certain subject matter.
- **Office/Administration Rooms:** All enclosed space used for administrative purposes (non-teaching), including open plan or closed/private office areas.
- **Auditoriums:** Large area for public gathering.
- **Library:** an area with the collection of books.
- **Computer Rooms:** Room for the teaching of computer related subjects. Such room is expected to have multiple screens/monitors and computers.
- **Worship Places:** Religious area.
- **Corridors:** Circulation area.
- **Sports Room:** Holding room for the gathering of athletes.
- **Workshops:** Room with equipment meant for workshop activities.
- **Restrooms:** Toilets or bathrooms with the educational *building*. This may or may not include areas with showers.

- **Other Space Types:** These may be self-defined areas by modifying detailed loads input.
- **Cafeteria:** Areas such as staff break rooms that have food preparation areas.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.

#### Description of Areas for Sub Typology: University

- **Classrooms:** Room whereby students are being taught.
- **Workshops:** Room with equipment meant for workshop activities.
- **Meeting Rooms:** Space for students/teams to discuss issues and collaborate.
- **Office/Administration Rooms:** All enclosed space used for administrative purposes (non-teaching), including open plan or closed/private office areas.
- **Auditoriums:** Large area for public gathering.
- **Library:** an area with the collection of books.
- **Worship Places:** Religious area.
- **Corridors:** Circulation area.
- **Restrooms:** Toilets or bathrooms with the educational *building*. This may or may not include areas with showers.
- **Other Space Types:** These may be self-defined areas by modifying detailed loads input.
- **Cafeteria:** Areas such as staff break rooms that have food preparation areas.
- **Labs:** A room used for the teaching and demonstration of certain subject matter.
- **Computer Rooms:** Room for the teaching of computer related subjects. Such room is expected to have multiple screens/monitors and computers.
- **Sports Room:** Room for the gathering of athletes.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.

#### Description of Areas for Sub Typology: Sports Facilities

- **Classrooms:** Room whereby students are being taught.
- **Meeting Rooms:** Space for students/teams to discuss issues and collaborate.
- **Office/Administration Rooms:** All enclosed space used for administrative purposes (non-teaching), including open plan or closed/private office areas.
- **Corridors:** Circulation area.
- **Labs:** A room used for the teaching and demonstration of certain subject matter.
- **Sports Room:** Room for the gathering of athletes.
- **Restrooms:** Toilets or bathrooms with the educational *building*. This may or may not include areas with showers.
- **Changing Rooms:** Room for changing after a sports session. This does not include showers.
- **Cafeteria:** Areas such as staff break rooms that have food preparation areas
- **Other Space Types:** These may be self-defined areas by modifying detailed loads input.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.

#### Description of Areas for Sub Typology: Other Educational Facilities

- **Classrooms:** Room whereby students are being taught.
- **Meeting Rooms:** Space for students/teams to discuss issues and collaborate.

- **Office/Administration Rooms:** All enclosed space used for administrative purposes (non-teaching), including open plan or closed/private office areas.
- **Corridors:** Circulation area.
- **Labs:** A room used for the teaching and demonstration of certain subject matter.
- **Sports Room:** Room for the gathering of athletes.
- **Restrooms:** Toilets or bathrooms with the educational *building*. This may or may not include areas with showers.
- **Changing Rooms:** Room for changing after a sports session. This does not include showers.
- **Cafeteria:** Areas such as staff break rooms that have food preparation areas.
- **Other Space Types:** These may be self-defined areas by modifying detailed loads input.
- **Indoor Car Parking:** Parking that is situated within the GIA of the *building*. Parking may or may not require mechanical ventilation and shall be modeled according to relevant *building* code requirements.

### Description of Areas for Typology: Mixed Use

The areas listed in Mixed Use (Self Defined) typology reflects a combination of the different areas in above typologies from the above section. Mixed use combinations are restricted to typologies of the same category as defined in Table 2.

In the current version of EDGE (V 3.0 and V 3.1), users must not select the following functional zones under the Area & Loads Breakdown section in the Design Tab: University, Teaching Hospital, Sport Facilities, Private Hospital, Dental Hospital and Warehouse.

### Detailed Loads Inputs

To enter detailed space conditions and loads for each activity area in a *subproject*, go to the “Area Loads and Breakdown” subsection and click on ‘Detailed Loads Input’. Project teams can define the space conditioning type and internal loads for each activity area.

Calculator

#### Detailed Loads Input

Activities	Space Conditioning Type	EDGE Default Space Conditioning	Default Heating and Cooling Set-point Temperature	Plug Loads (W/m <sup>2</sup> )	Equipment Load (W/m <sup>2</sup> )	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 7: Detailed loads Input page (example).

Some of the options available are described below.

- **Space Conditioning Type:**
  - **Both Heating and Cooling/Only Heating/Only Cooling.** This indicates that a space that has thermal conditioning requirements, and where heating or cooling is provided within the *building*.

- **No Conditioning Provided.** This indicates that a space that has thermal conditioning requirements, and where no heating or cooling is provided within the *building*. The EDGE App calculates the space thermal conditioning requirements for the space as usual, but any associated energy required is shown as Virtual Energy in the Energy Chart.
- **No Conditioning Required.** This indicates a space that does not have thermal conditioning requirements, and where no heating or cooling is provided within the *building*. Areas that are, within the GIA, but outdoors (e.g., balconies) also may select this space conditioning type. For this space conditioning type, it is expected that the space is not required to be maintained at comfort temperatures at any point in the future. This only applies to certain types of spaces such as utility rooms, balconies. The EDGE App does not calculate any associated energy use for thermal conditioning for these spaces. The following spaces will be allowed to select “No Conditioning Required” without providing detailed evidence:

- Residential: Utility & Balcony
- Commercial and industrial: Corridor areas (Corridors, Corridors & Lobby, Mall Area (Communal Corridors), etc.)
- Storage Areas (Dry storage, Storage, Mechanical & Electrical, Store, Lockers, Linen & Store), except refrigerators and freezers.

Additionally, spaces that meet any of the conditions below may be considered thermally unconditioned (i.e. “No Conditioning Required”) if evidence is presented<sup>3</sup>:

- Highly ventilated spaces. Defined as spaces with a continuous ventilation capacity of at least 3 liters per second for every square meter of the space's floor area.
- Spaces with large openings, characterized as having one or more permanent openings that are equal to or exceed an area of 0.003 square meters per square meter of the space's floor area.
- **Mechanical ventilation.** This indicates that a space that does not have thermal conditioning requirements but mechanical systems, such as fans, are used to circulate and exchange air within the space. The EDGE App does not calculate any associated energy use for thermal conditioning for these spaces.
- **Default Heating and Cooling Set Point temperature.** These values are visible for information only; the values are not editable in the EDGE App.
- **Occupancy (m<sup>2</sup>/ person).** The occupancy rate for a given space. This value is averaged occupancy rate defined in the design tab as per the sample calculation below.

---

<sup>3</sup> Thermally unconditioned spaces as defined in ISO 52016-1:2017

When only occupancy density value in the design tab is given, each activity area takes a weighted average occupancy based on EDGE assumptions.

- Occupancy density value (design tab):  $5 \frac{m^2}{person}$
- Factor:  $\frac{23.32 \frac{m^2}{person}}{5 \frac{m^2}{person}} = 4.66$
- Office Space:  $\frac{7.5 \frac{m^2}{person}}{4.66} = 1.61 \frac{m^2}{person}$

Table 3: Default occupancy assumptions for a warehouse building.

Activity area	Occupancy (m <sup>2</sup> /person)
Office Space	7.50
Receiving Area	50.00
Shipping Area	0
Production Area	15.0
Inventory Area	0
Mechanical & Electrical Room	0
Kitchen & Food Preparation	0
Indoor Car Parking	0
Cold Storage Area	0
	<b>23.2</b>

When user overwrites occupancy value of one or many activity areas, a similar logic is followed, but the remaining areas use default values.

- **Plug Loads (W/m<sup>2</sup>).** This encompass the energy consumption of electrical equipment that is not fixed, such as computers, printers. It is assumed that 100% of the heat from plug loads is added to the space. Schedules are assumed to be a product of occupied hours and usage factor.
- **Equipment loads (W/m<sup>2</sup>).** Energy consumed by devices within a *building* that are not part of the permanent structure or the *building's* HVAC and lighting systems. It is assumed that 100% of the heat from equipment is added to the space. Schedules are assumed to be a product of occupied hours and usage factor.
- **People Sensible Heat (W/person).** The sensible heat emitted by the people per hour in a space. It is recommended to keep the default value.
- **People Latent Heat (W/person).** The latent heat emitted by the people per hour in a space. It is recommended to keep the default value.

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 8. 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. In industrial *buildings*, documenting process loads in the form of equipment loads is mandatory as described in *Part 1 – Building Certification Guidance – Non-Typical EDGE Projects, Industrial Buildings*. In new *buildings*, these inputs are not required.

Calculator

### Detailed Loads Input

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

Figure 8: Plug and Equipment Loads in the Detailed Loads Input.

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

- 1. Inventory Equipment:** Create a detailed inventory of all energy-consuming equipment in the *building*, including appliances, office equipment, and 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 high (e.g. > 50 pumps), *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 Usage Factors:** Apply usage factors to account for variation in use during the year. If this value is not known, assume 0.5. Alternatively, standards for typical internal gains for equipment can be implemented from sources such as CIBSE, ASHRAE Fundamentals, or peer-reviewed sources.
- 6. Calculate loads per activity area:** The total equipment/plug loads must be divided by the corresponding area (units should be W/m<sup>2</sup>), added per activity area and entered in the Design Tab > Areas & Load Breakdown section.

For example, Table 4 shows a data summary with typical equipment loads, in the form of appliances, for a residential *building*. To report the loads in a *building*, the power values shall be divided by the corresponding activity area.

Table 4: Internal gains for loads calculation of a residential building in Morocco<sup>4</sup>.

Activity Area	Equipment	Power	Unit
Living	TV	120	W
<b>Kitchen</b>	Refrigerator	100	W
<b>Kitchen</b>	Washing Machine	2000	W

Note that equipment used for food preparation is accounted for in a separate section.

### Kitchen & Food Prep Loads Inputs

A *building* may have one or more of the following kitchen & food prep areas. These areas are defined as follows:

- **Kitchen:** This must be checked if there is a kitchen for food preparation (of any type and size) within the *building*.
- **Pantry:** This must be checked if there is minimal food preparation (kitchen with no cooking equipment) within area serving food and drinks. Examples of these areas are offices with microwaves, breakfast bars with toasters and/or microwaves, etc.
- **Coffeehouse/Café:** This entry assumes coffee is being served/made on site. For example, offices with coffee machines, coffee shops, restaurants that serve coffee, etc.

Calculator

#### Kitchen & Food Preparation

Kitchen
  Pantry
  Coffeehouse/Café

Description	Default	User Selection	Unit
No. of Meals /day	1.00	<input type="text"/>	Meals/Person/day
Total People having on site meal	40%	<input type="text"/>	%
Food Prepared on Site	70%	<input type="text"/>	%
People using pantry	50%	<input type="text"/>	%
People using coffeehouse	10%	<input type="text"/>	%
Energy per meal	2.30	<input type="text"/>	kWh/meal

**Data used for each type of food preparation**

Kitchen
  Pantry
  Coffeehouse / Cafe

Figure 9. EDGE Kitchen & Food Preparation data

By selecting the above, the selection would estimate the amount of energy required for cooking requirements.

<sup>4</sup> Ameur, M., Kharbouch, Y., & Abdelaziz, M. (2020). Optimization of passive design features for a naturally ventilated residential building according to the bioclimatic architecture concept and considering the northern Morocco climate. doi:10.1007/s12273-019-0593-

The following parameters can be used to define kitchen & food prep loads:

- **No. of Meals/day:** The expected daily meals for each person. Evidence-based documentation is required to support any default value changes.
- **Total people having on site meal:** The proportion of people having on-site meals. Evidence-based documentation is required to support any default value changes.
- **Food Prepared on Site:** The proportion of food being prepared (cooked) on-site vs ready-to-eat meals that do not require much preparation. Evidence-based documentation is required to support any default value changes.
- **People Using Pantry:** The proportion of occupants using the pantry. This percentage will not be applicable if “Pantry” in the header is not checked. Evidence-based documentation is required to support any default value changes.
- **People Using Coffeehouse:** The proportion of occupants using the coffeehouse. This percentage will not be applicable if “Coffeehouse” is not checked in the header. Evidence-based documentation is required to support any default value changes.
- **Energy per meal:** This accounts for the energy required to prepare a meal. If a more efficient cooking method is utilized (e.g., induction cooking), the energy per meal may be reduced. A narrative and calculation are required to support any default value changes, and additional savings cannot be claimed for technologies that save energy.

The EDGE App will assume the default values if a user does not edit these details. For the case of Kitchen and & Food Prep Loads, evidence-based practices for documenting these include:

- Building surveys of current occupants, observing *Annex 1: Sampling Methodology* requirements for sampling consideration;
- Direct evidence from energy meters, sensors, or other measurements;
- A narrative justification of the consumption patterns that align with the actual kitchen facilities in the *building*.

### Documentation Submission

If the project team does not use the default Detailed Loads Inputs, the following documentation is required:

- A narrative on the different areas and conditioning requirements;
- Loads calculations corresponding to entry data in the Detailed Loads Input;
- Occupancy details where relevant;
- Calculations assumptions of equipment load, including usage factor or the reference standard used.

If the project team does not use the default Kitchen & Food Prep Inputs, the following documentation is required:

- A statement of intent on occupancy and meals prepared on-site and;
- Applicable evidence-based justification, such as building occupants survey results and;
- Calculations of energy per meal.



## Building Dimensions

### Default Building Length

- **Orientation (North, North East, East, South East, South, South West, West, North West):** EDGE assigns an octagonal shape to a new *building* by default, with equal wall lengths in each of the eight main orientations. Using the closest orientations, a user shall input the *building* lengths that reflect the actual design. When multiple *buildings* are being combined into a single *subproject*, add up the total length per orientation. Users must input zero for any orientations that do not represent the actual building design. Otherwise, EDGE will model the *building* with the default inputs.

Note: Wall lengths, floor-to-floor heights and number of floors is used to calculate the area of façade per orientation.

- **Façade Area Exposed to Outside Air (%) (North, North East, East, South East, South, South West, West, North West):** This percentage represents the portion of the enclosing wall that is in contact with the external environment. By default, this value assumes 100% exposure. However, if a façade is not exposed because it is shared with an adjacent property or a similar reason, it may be updated with the appropriate percentage. If a facade is fully shared, this value must be 0% for a shared wall in a townhome, for example.

When calculating *building* length for buildings with varying lengths for each floor, the length of both above and below-grade walls shall be included, and a weighted average building length shall be used to account for the difference in lengths between above-grade and below-grade walls. Additionally, when determining the "Façade Area Exposed to Outside Air (%)," the calculation must be weighted.

For *buildings* with varying lengths below grade, the percentage of the area exposed is calculated by subtracting the earth-berm wall area from the total façade area and then dividing it by the total façade area. This approach ensures that the façade area calculation accurately reflects the reduced exposure due to the presence of earth-berm or underground walls.

### Documentation Submission

Project teams shall provide, where relevant:

- Architectural drawings showing the dimensions of the building or development;
- Measurements of building lengths on architectural drawings (for existing buildings);
- Date-stamped photographic evidence (For existing buildings);
- For multiple buildings, calculations to demonstrate the final building dimensions;
- A narrative if the building is **not** 100% exposed to the outside air.

## Building HVAC System

### Simplified Inputs

- Does the Building Design Include an AC system?** The options are “Yes” and “No”. Specify if the *building* design includes an AC system for cooling. It will use electricity as fuel. If the *building* design does not have an AC system, the cooling load will be reflected as virtual energy.

For *buildings* that provide cooling only to partial spaces, project teams should select “Yes” and use the Detailed Load Inputs to indicate areas where cooling is provided.
- Does the Building Design Include a Space Heating System?** Options are Yes, No. Specify if the *building* design include space heating system. It will use the fuel indicated in the section ‘Fuel Usage’ for space heating. If the *building* design does not have a heating system, the heating load will be reflected as virtual energy.

For *buildings* that provide heating only to partial spaces, project teams should select Yes, and use the Detailed Load Inputs to indicate areas where heating is provided.

### Detailed Inputs

- Heating period.** Allows project teams to determine whether heating is provided for each month of the year. Modification of any of these fields requires approval by IFC. In future versions, detailed inputs will not be visible to the user.
- Cooling period.** Allows project teams to determine whether cooling is provided for each month of the year. Modification of any of these fields requires approval by IFC. In future versions, detailed inputs will not be visible to the user.

### Applicable Baseline

- EDGE:** Assumptions typically found in developing economies. Baseline assumptions have been adjusted to improve the match to local conditions.
- ASHRAE 90.1-2016** Assumes typical systems efficiencies for heating, ventilation and air conditioning systems from ASHRAE 90.1-2016 (which applies to advanced economies). Baseline assumptions have been adjusted to improve the match to local conditions.

### Does the Building Design Include Purchased Chilled Water and Heating supply (District Cooling or Heating)?

- District Cooling Only.** The base case assumes that cooling demand is fulfilled via district cooling. A *building* connected to district cooling will have a different base case system per modeling methodology.
- District Heating Only:** The base case assumes that heating demand is fulfilled via district heating. A *building* connected to district heating will have a different base case system per modeling methodology.
- Both Heating and Cooling:** The base case assumes that cooling and heating demands are fulfilled by a cooling/heating district.
- None:** No demand is fulfilled by district cooling/heating.

### Documentation Submission

Documentation required to demonstrate *building* HVAC Systems include:

- A narrative describing the heating and/or cooling system and HVAC Calculations;
- Electrical and mechanical drawings;
- For existing *buildings*: Date-stamped photos showing the installed HVAC equipment.

## Fuel Usage

### Fuel Usage

- **Hot water:** Defines the fuel for the base case hot water system of the *subproject*. Options are Electricity, Natural Gas, Diesel, LPG, and None. If there is no hot water infrastructure and/or provision of hot water, the project team must select “None”. The selection must be consistent with EEM18: Domestic Hot Water (DHW) System. When infrastructure is provided but the equipment is not, the relevant fuel type must be selected. For residential *buildings* whereby developers do not provide a hot water unit, but there is an expectation that owners may install a hot water unit, project teams shall select the fuel of the expected hot water system.  
If there is more than one type of fuel source used in the *building*, the fuel for the base case system shall be entered for the majority. For example, if 30% of hot water uses gas, and 70% uses electricity, the electricity entered in Fuel Usage shall be entered as ‘Electricity’. For the improved case, users may select more than one fuel source within the calculator in EEM18.
- **Space heating:** Options are Electricity, Natural Gas, Diesel, LPG, Coal and Fuel Oil. The selection shall be consistent with EEM16: Space Heating System. If the actual fuel is not available from the dropdown list, select a fuel from the same family, e.g. fossil fuels, replace the emission factors, and costs, where applicable; and include the description of the fuel in the project narrative alongside relevant evidence.
- **Generator:** Options are Diesel, Natural Gas, and LPG.
- **Electricity Generation Using Generator:** Percentage of electricity provided by the generator. If the *building* does not have any generator, 0% may be entered.
- **Cooking fuel:** Options are Electricity, Natural Gas, Diesel, LPG, Coal and Fuel Oil. *Buildings* with “Kitchen” enabled shall select the fuel used for the preparation of meals. *Buildings* with “Kitchen” and “Pantry” and/or “Coffeehouse” with multiple fuel uses, shall enter the fuel type used to prepare the main type of food prepared.

### CO2 Emissions Factor

- **Electricity and other fuels (kg of CO<sub>2</sub>/kWh):** Emissions factor for the current location. A value from a trusted source may replace this value. Examples include UNFCCC Harmonized IFI Grid Factors, International Energy Agency (IEA), and national and state government websites.

### Cost Input

- **Electricity and other fuels (cost/kWh):** Unitary fuel cost for the current location and currency. A value from a trusted source may replace this value. Examples include utility providers and national and state government websites.

### Documentation Submission

The following documentation is required for submission for fuel usage:

- Narrative confirming each fuel source. For *buildings* with multiple fuel sources used on site, the highest proportion shall be considered. E.g., if 75% of hot water is delivered using electricity, and 25% of hot water is delivered using natural gas, the Fuel Source shall indicate “Electricity”. A narrative shall be provided explaining the reasoning for multiple fuel sources.

## Climate Data

### General climate information

- **Elevation.** (m) The elevation of the selected city.
- **Rainfall.** (mm/year) The average annual rainfall for the selected city. May impact calculations related to rainwater calculations.
- **Latitude.** (degrees) The latitude for the selected city. Relevant for calculations that need sun angles. A positive number is required in this field. If the *building* is in the southern hemisphere, drop the minus sign.
- **ASHRAE Climate Zone.** Determines the base case heating and cooling systems. Refer to *ASHRAE 90.1-2016 Appendix G – Baseline HVAC System Types* for more information. For *buildings* that are in a city that is not available in EDGE, the closest location with the same climate zone shall be selected.

### Temperature

- **Monthly max temperature and Monthly min temperature.** (degrees) The max and min dry bulb temperature for the selected city. If a *building* is based on a city that is not in EDGE, and weather data has to be updated, weather data may be updated from a reliable source.
  - A Test Reference Year (TRY) if the *building* location is within 50km of a TRY location;
  - In the absence of local TRY weather data, an actual year of recorded weather data from a location within 50km of the *building* location;
  - In the absence of TRY or actual weather data within 50km, interpolated data based on three points within 250km of the *building* location.
  - Weather data may be obtained using sources such as Meteonorm(<https://meteonorm.meteotest.ch/en/typical-meteorological-years>) or EPW Map (<https://www.ladybug.tools/epwmap/>).

### Relative humidity

- **Monthly average relative humidity.** (%) The average relative humidity for the selected city. If a *building* is based on a city that is not in EDGE, and weather data has to be updated, weather data shall be updated from reliable sources.
  - Weather data may be obtained using sources such as Meteonorm (<https://meteonorm.meteotest.ch/en/typical-meteorological-years>) or EPW Map (<https://www.ladybug.tools/epwmap/>).

### Wind

- **Monthly average wind speed.** (m/s) The average wind speed for the selected city. If a *building* is based on a city that is not in EDGE, and weather data must be updated, weather data shall be updated from reliable sources.
  - Weather data may be obtained using sources such as Meteonorm(<https://meteonorm.meteotest.ch/en/typical-meteorological-years>) or EPW Map (<https://www.ladybug.tools/epwmap/>).

## Documentation Submission

For project teams providing an updated weather file/data, the source of the weather data shall be submitted. For government weather data, a URL is considered sufficient.

## Annex 1: Sampling Methodology

Sampling is a cost-effective method to estimate the characteristics of a population with the minimum amount of effort while having statistical confidence in the representativity of the results. For example, to determine the rated power of a large number of pumps, it is possible to investigate a representative number of samples, rather than the entire population.

Project teams may follow the requirements from the latest recommendations of the Uncertainty Assessment for International Performance for Measurement and Verification Protocol (IPMVP) for sampling section 1.5 sample size determination<sup>5</sup>.

Use equations 11 and 12 to determine the minimum number of elements that shall be sampled given the entire size of the portfolios. Unless you have evidence, you may assume a Z value for 90% confidence and 10% precision and a CV of 0.5.

Equation 11:

$$n_0 = \left( \frac{Z \cdot CV_{\%}}{e_{\%}} \right)^2$$

Where:  $CV_{\%}$  is the coefficient of variation, the standard deviation normalized by the mean.

$e_{\%}$  is the desired level of relative precision. For example, 10%.

Z is the t-statistic for the desired confidence level. For example, 1.645 for 90% confidence.

$n_0$  is the sample size, assuming infinite number of units.

Equation 12:

$$n_{reduced} = \frac{n_0 \cdot N}{n_0 + N}$$

Where:  $N$  is population size, e.g. number of units.

$n_{reduced}$  is the reduced minimum sample after adjustment.

For example, the minimum sample in a population of 148, is 46.

Parameter	Value
Z (Confidence level)	1.645
CV <sub>%</sub> (Coefficient of variation)	0.5
e <sub>%</sub> (Desired level of relative precision)	0.1
n <sub>0</sub> (Sample size assuming infinite population)	67.7
N (Total population size)	148
n <sub>reduced</sub> (Sample size adjusted by population size)	46

<sup>5</sup> <https://evo-world.org/en/library/download-protocol-documents-mainmenu-en/ipmvp-core-concepts-application-guides-0/1773-2019-uncertainty-assesment-for-ipmvp-application-guide-in-english>



[www.edgebuildings.com](http://www.edgebuildings.com)