WEii

A guide to Paris Proof and WENG

For energy performance in refurbishment and new construction

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About Dutch Green Building Council

The Dutch Green Building Council (DGBC) is the national social organisation committed to rapidly making the built environment future-proof. This is necessary because climate change is happening faster than expected. With our broad support base in the construction and real estate sector, we can make a difference. DGBC was founded in 2008 as a market initiative.

In 2017, DGBC established Paris Proof. Paris Proof is a built environment that fits within the objectives of the Paris Climate Agreement. This means that energy consumption of the built environment will be reduced by two-thirds and that we build within the CO_2 budget.

TVVL and DGBC have developed WEii as a uniform calculation method for actual energy consumption.

About Arup

Since 1946, Arup has been working with partners and clients worldwide on solutions that are not only technically advanced but also contribute to a future in which people and the environment are in balance. Arup is an international engineering consultancy active in more than 130 disciplines, and together creates safe, resilient and future-oriented living environments for everyone.

Sustainable thinking and action are in Arup's DNA. For more than 75 years, the organisation has been committed to a way of working that helps the world move forward, supported by its global strategy for climate neutrality. Arup aims to be completely carbon neutral by 2030.

Arup designs solutions that create lasting value. For people, nature and the climate. We shape a better world.

DGBC Dutch Green Building Council

ARUP

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Terms and definitions

Actual energy consumption
Refers to the energy supply and feed-in measured at the main meters, balanced over a year, and can be verified based on energy consumption data/energy bills.

Actual energy intensity indicator (WEii)
Indicator of the actual energy consumption of a building, expressed in kWh/m2 per year, calculated in accordance with the WEii protocol.

BBL – Environment Buildings Decree
The government document that sets out rules on the safety, health, usability and sustainability of buildings in the Netherlands.

Commissioning
The process where installations and systems in a building is tested, adjusted and documented to ensure that they function according to the design intend.

Energy performance gap
The difference between the expected and actual energy consumption of a building. This difference often means that buildings fail to meet their targets unless specific measures are taken during the design, construction and transfer phases.

Fit-out
In this guide, a fit-out is seen as a package of interior design components that fall under the responsibility of the tenant or user. In consultation between the tenant and landlord, this may also include certain installations. Alike the BREEAM-NL New Construction and Renovation assessment guideline, this guideline follows the Full scope. building from Table 1 in Section 2.2.

Fit-out guideline
This guideline clarifies the division of responsibilities (demarcation) between the landlord and tenant, and indicates which modifications are permitted and which energy performance requirements apply to the tenant's part of the interior (fit-out).

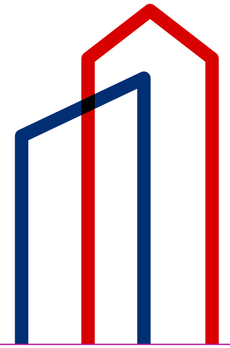
Building automation & control system (BACS)
An integrated system used to monitor and control installations such as climate control systems, lighting, and energy consumption. The system contributes to achieving energy performance targets by centrally managing control strategies and measurement data.

Building function
Parts of a building that have the same intended building use and together form a unit.

Green Lease
An agreement between the landlord and tenant aimed at minimising the environmental impact during the use and operation of the building. It forms a legal and organisational framework in which both parties commit to achieving and maintaining the environmental performance of the building during the term of the lease. The Green Lease includes agreements on energy consumption, maintenance, hours of use and furnishing requirements. It is drawn up as an appendix to the tenancy agreement.

(Independent) design reviewer
A recognised expert who assesses the design and energy consumption simulation for the feasibility of the WEii (Paris Proof) score. This reviewer takes place at an early stage of the design process and helps to identify and manage risks.

Paris Proof
Paris Proof is the maximum WEii score set by the Dutch Green Building Council (DGBC) for the various types of use within the framework of the objectives of the Paris Climate Agreement.



Paris Proof ambition statement

A designation that may be used publicly to indicate Paris Proof ambitions for a building design or building under construction that has not yet been formally certified, but for which the process approach described in this manual is being used. This designation may be used after the Paris Proof Energy Commitment has been signed and the associated requirements have been met.

Paris Proof Energy Commitment

A voluntary agreement between the applicant and DGBC, in which the applicant commits to realising the design, construction and commissioning of the building in line with the Paris Proof energy targets.

Paris Proof Action Plan (PPAP)

Must set out how the design intention in terms of energy efficiency will be guaranteed from the design stage to the in-use phase of a building.

Simulation model

A dynamic calculation model to predict the expected energy consumption of a building. The model is applied in various phases of a project and is essential for testing the design against the Paris Proof objectives.

Truly Energy Neutral Building (WENG)

A building is truly energy neutral if the balance of energy purchase and energy feed-in of all relevant main meters over a year is equal to zero. This is based on average climate conditions.

WEii certificate

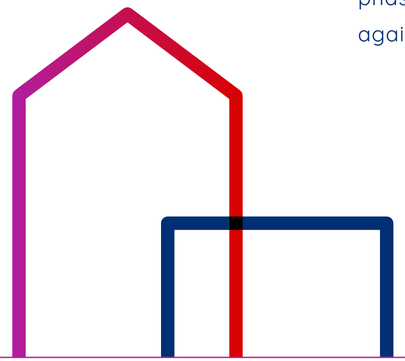
Confirms that a building has a WEii score calculated according to the WEii protocol. A WEii certificate is issued by a WEii licence holder.

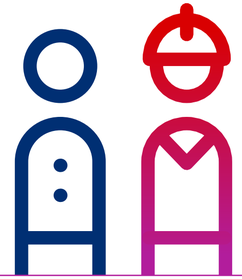
WEii licence holder

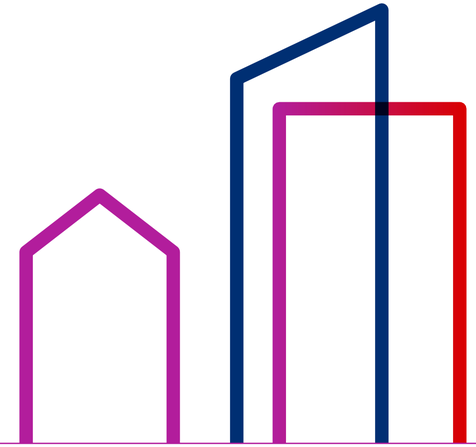
An organisation that is authorised to issue a certified WEii score for a building. These can be organisations where at least one employee has completed the official WEii training and successfully passed an admission audit.

WEii protocol

WEii is an energy efficiency indicator based on the actual energy consumption of a building. The WEii protocol describes the scope of WEii, the determination methodology and the energy efficiency classes.







1 Introduction

This is the first version of the 'Guide to Paris Proof and WENG, for energy performance in refurbishment and new construction'. This guide focuses on buildings that are yet to be built or transformed/renovated and whose energy consumption is still unknown. This contrasts with the Actual Energy intensity indicator (Dutch: WEii), which focuses on determining the energy consumption of existing buildings whose energy consumption is known. For new buildings, the target is 0 kWh/m²/year, class WENG (Truly energy neutral building), calculated according to the WEii protocol (including user-related energy). The new-build threshold is set at buildings completed from 1 January 2021. For renovations (existing construction) of buildings built before 1 January 2021, the target for various building functions is set in the WEii class Paris Proof.

WEii differs from other energy performance certifications such as BENG (NTA8800), energy labels and BREEAM-NL ENE01 criteria. With WEii, it is not **the theoretical (predicted) energy consumption** that is leading in the certification, but the **actual energy consumption** – demonstrated by energy bills. In practice, there is often a significant difference between theoretical energy consumption and actual energy consumption. This difference is referred to as the 'energy performance gap'. The causes are diverse and spread across all phases of the process. Examples include incorrect design assumptions, construction errors, insufficient quality in commissioning, lack of energy monitoring, uncoordinated adjustments in the process, invisible defects in construction products or installations, energy waste due to inefficient use, and so on.

This guide provides a process for reducing the risk of an 'energy performance gap' and provides clarity on the steps needed to realise the Paris Proof ambitions in practice.

The **purpose** of this guide is twofold:

1. To provide stakeholders with clarity about the roles and responsibilities involved in the process of achieving a Paris Proof renovation or WENG new-build property.
2. To provide a framework with which projects can already (in the design phase) can be marketed as Paris Proof (Paris Proof ambition), without the project being certified. Certification is only possible once the building is in use.

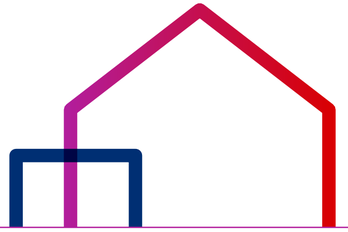
Paris Proof consists of operational (energy) targets and embodied carbon targets. This guide only relates to the energy objectives of the Paris Proof commitment and can be applied to all building functions as specified in the WEii protocol. The demarcation of the building energy use that is included in the calculation is in line with the WEii protocol.

Intended parties, roles and responsibilities

This guide is intended for all parties involved in the Paris Proof process, with specific attention to the applicant and the associated project team. The role-based structure of the document ensures that relevant information is presented clearly and accessibly for each responsibility. At the same time, all parties involved can consult the complete set of documents for a comprehensive understanding of the requirements and the process.

The Paris Proof guide serves as a guideline for the following target groups:

- Parties who want to reduce the risk of not achieving the Paris Proof objectives due to the energy performance gap.
- Parties who wish to publicly demonstrate that they are focused on achieving Paris Proof objectives prior to obtaining the WEii certificate for the building in question.
- Parties wishing to validate and publicly demonstrate that they comply with the Paris Proof energy target after completion of construction and at the start of the operational phase.

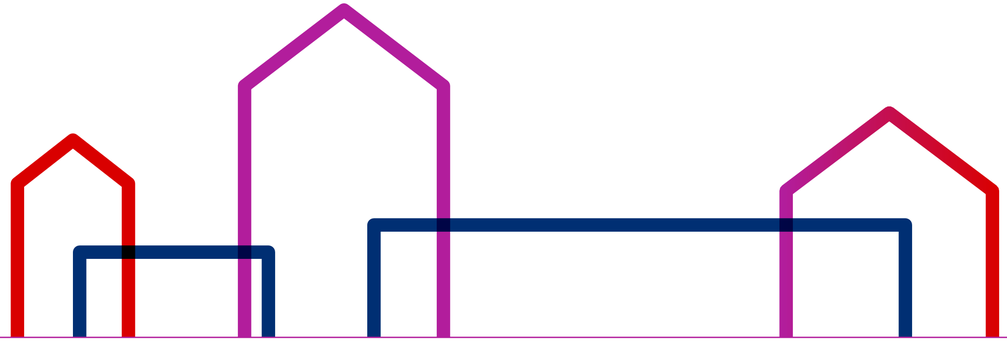


The table below provides an overview of the most important roles in the Paris Proof process.

Role	Explanation	Parties
Administrator	Manages the formal process for the Paris Proof Energy Commitment and the WEii certification process.	DGBC, TVVL
Applicant	The initiator of the construction project and the organisation that will sign the Paris Proof Energy Commitment.	Building owner, developer, investor
Licence holder	Prepares WEii score and has completed WEii training, and other obligations under the WEii process.	Accredited assessor
Paris Proof manager	The person (e.g. sustainability advisor) who draws up the Paris Proof Action Plan and supervises its implementation.	Advisor
Simulation expert	Experienced simulation expert, responsible for creating the energy simulation, additional energy calculations, and performing the sensitivity analysis.	Simulation expert
Independent design reviewer	Expert in energy-efficient design and energy simulation. Assesses whether the design, energy simulation and calculation is in line with the Paris Proof ambition. This reviewer must be completely independent of the design team.	Simulation expert/installation advisor
Independent commissioning manager	Creates the commissioning plan.	Installation advisor
Design team	Responsible for implementing Paris Proof requirements in the design and ensuring its compliance in later phases.	Architects, sustainability advisers, mechanical and electrical engineers, building physics consultant and, indirectly, the other consultants on the project.

Table 1 - Roles and responsibilities

This guide is intended for all parties involved in the Paris Proof process, with specific attention to the applicant and the associated project team.



2 The tasks and responsibilities

In this chapter, we provide a concise overview of the contents of the Paris Proof guide. The following chapter explains the tasks and responsibilities for each phase and for each party in more detail.

This Paris Proof guide applies to virtually all parties involved in the construction chain, throughout all phases of the project. Each party bears responsibility for ensuring quality and achieving the Paris Proof objectives. It is therefore essential that all parties involved commit to the joint ambition and the associated tasks through contractual agreements.

An important tool in this process is the Paris Proof Action Plan (PPAP). This plan sets out the tasks and responsibilities of each party in ensuring the Paris Proof ambition for a specific project. This guide provides a framework for the content of that plan. During the design phase, crucial choices are made that directly influence the achievement of the Paris Proof objectives. It is therefore necessary to assess the design based on an estimate of future energy consumption. Since Paris Proof focuses on actual energy usage, energy simulations that can accurately predict this usage must be used. In addition, it is important that the design, simulations and energy calculations are assessed.

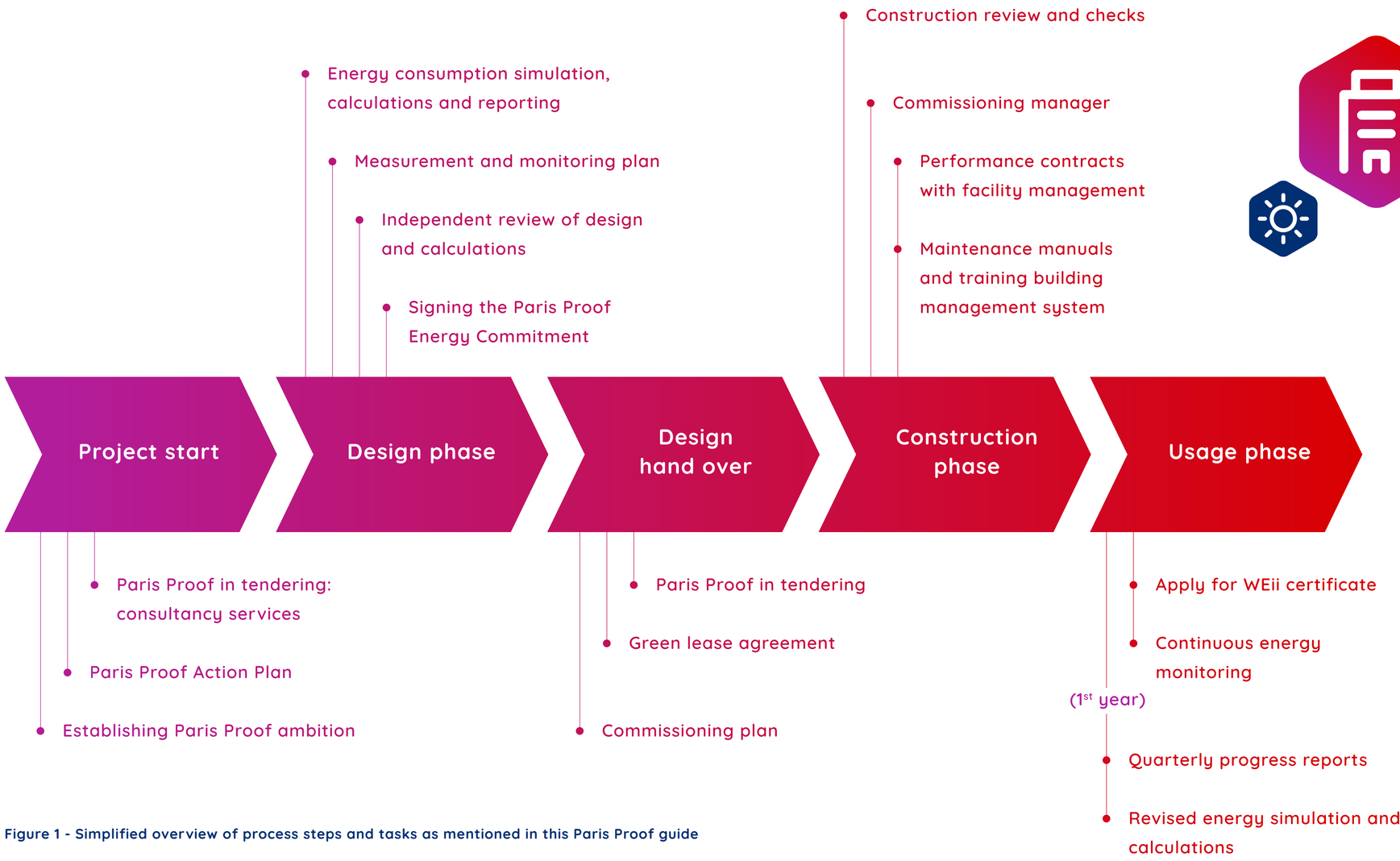


Figure 1 - Simplified overview of process steps and tasks as mentioned in this Paris Proof guide

The proposed process makes it possible to communicate the Paris Proof ambitions of the building prior to certification in the use phase.
This is done by signing the **Paris Proof Energy Commitment**, provided that the associated requirements are met.
This allows external parties, such as potential tenants or investors, to be confident that the necessary steps are being taken towards the Paris Proof goal.

During the construction phase, the focus is on maintaining the Paris Proof ambition and achieving the intended quality. Attention is also paid to a careful transfer to the in-use phase, ensuring that the building can be managed properly. In the operation phase, intensive monitoring takes place, particularly during the first year. By comparing predictions from simulations and calculations with the measured values from energy meters, deviations can be quickly identified. This enables timely adjustments to be made, so that after the first year, the building is eligible for a WEii certificate with Paris Proof of WENG.

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2.1 List of actions and responsibilities per process phase

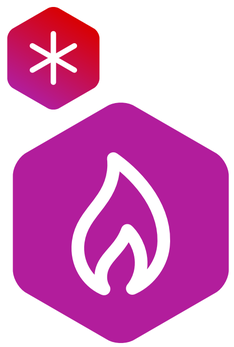
The table below provides an overview of the actions and responsibilities. Depending on the characteristics and project organisation of the specific project, the roles and responsible and involved parties may vary slightly. The right-hand column indicates in which section of the following chapters, will explain the task or responsibility in more detail.

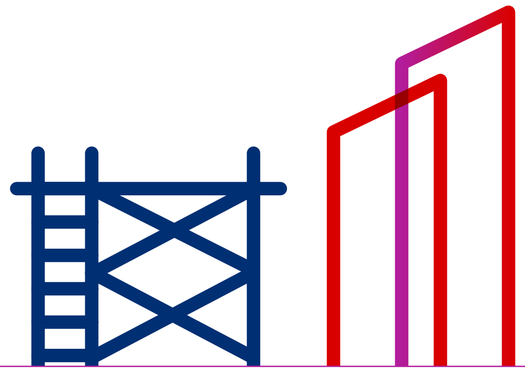
The proposed process makes it possible to communicate the Paris Proof ambitions of the building prior to certification in the use phase.

	Project start		3.1
1	Establishing Paris Proof ambition for project	Applicant	3.1.1
2	Paris Proof ambition and approach in request for proposals (RfP) consultancy and development services	Applicant and client	3.1.2
3	If possible, involve future building owner	Applicant	3.1.3
4	Create Paris Proof Action Plan	Applicant and sustainability advisor	3.1.4
5	Appointing a Paris Proof manager	Applicant	3.1.5
	Design phase (Preliminary design, provisional design, final design, technical design)		
6	Energy simulation, calculation and reporting by an experienced specialist	Simulation expert	3.2.1
7	Create a measurement and monitoring plan	Installation advisor	3.2.2
8	Independent review of design and energy calculation	Independent design reviewer	3.2.3
9	Signing of the Paris Proof Energy Commitment	Applicant	3.2.4
10	Involving the facilities manager in the design	Applicant	3.2.5

Table 2 (part 1) - List of actions and responsibilities per phase in the Paris Proof process

By comparing the predictions from simulations and calculations with the measured values from energy meters, deviations can be quickly identified.





	Preparing construction and tenant agreement		
11	Incorporating Paris Proof requirements into tendering strategy, specifications, liability clauses	Developer/Advisors	3.3.1
12	Transfer design to contractor	Applicant/Design team	3.3.2
13	Appointing supervision and control during construction	Applicant	3.3.3
14	Appointing a commissioning manager	Applicant	3.3.4
15	Creating a commissioning plan per service	Commissioning manager	3.3.5
16	Creating the Green Lease contract + technical tenant requirements	Landlord	3.3.5
	Construction phase		
17	Reassessment of energy simulation	Simulation expert	2.4.1
18	Commissioning	Contractor and commissioning manager (assessment)	2.4.1
19	Supervision and control	Advisors and commissioning manager	2.4.4
20	Preparation of tests and manuals documentation for operation and maintenance	Contractor and commissioning manager (assessment)	2.4.4
21	Establishing performance contracts with facilities manager	Applicant/Landlord	2.4.2
22	Appointing a party for energy monitoring in accordance with Paris Proof	Applicant/Landlord	2.4.3
23	Setting up maintenance manuals and training	Applicant/Design team	2.4.4
	Operational phase		
24	Recalibrate energy simulation to actual fit-out, actual operation and control	Simulation expert	2.5.1
25	Review of fit-out	Applicant/Installation advisor/ Simulation expert	2.5.2
26	Quarterly energy monitoring reports	Applicant/Landlord	2.5.3
27	WEii certification	Applicant/Landlord	2.5.4

Table 2 (part 2) - List of actions and responsibilities per phase of the Paris Proof guide

3 Description of the process steps

3.1 Project start

3.1.1 Establishing Paris Proof ambition

At the start of the project, the Paris Proof ambition is established. Setting this ambition forms the starting point for the subsequent steps in this guide. Additional expertise may be required to determine the exact ambition. Additional expertise may be required to determine the exact ambition, for example when the building has specific energy uses that can be excluded according to the WEii methodology, or when it concerns a building with both new and existing construction elements.

3.1.2 Paris Proof request for advice and development services

When a building owner engages an external developer to develop the property, it is essential that this developer is aware of the Paris Proof ambitions. By including both the ambition and the process approach in accordance with this Paris Proof guide into the contractual agreement, roles and responsibilities can be clearly agreed in advance. This also applies to the consultants involved, such as architects, engineers and other experts. For them too, the Paris Proof ambition and the associated process approach must be part of the contractual agreements. If additional advisors are added to the team later in the process, the same principle applies.

3.1.3 Involving future building owner

When the post construction owner of the building is actively involved in the design and construction process, there is a greater chance that the original design intention will be retained. This owner often acts as an important driving force behind achieving the Paris Proof targets set during the development process.

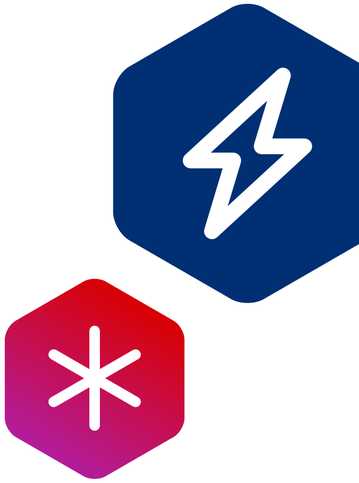
> By aligning both the ambition and the process approach in accordance with this Paris Proof guideline in the contractual agreement, roles and responsibilities can be clearly defined in advance.

In many cases, however, buildings are developed with the goal to sell, creating the risk that energy efficiency targets are lost upon transfer. In such situations, it is important that potential buyers are fully informed about the Paris Proof process and the contractual obligations arising from the Paris Proof agreement.

3.1.4 Paris Proof Action Plan (PPAP)

In the initiative phase, or as early as possible in the design process, a Paris Proof Action Plan (PPAP) should be drawn up. The purpose of this plan is to establish how the design intention in terms of energy efficiency will be safeguarded from the design stage through to commissioning. This is essential, as many projects fail to meet the original objectives set out in the design phase. This is often caused by decisions that are made later in the process, often by parties outside the original project team. The initiative for drawing up and submitting the PPAP lies with the applicant. At the applicant's request, the document can be drawn up and supervised by, for example, the sustainability advisor. Other advisors and stakeholders can provide input for the document.

The PPAP includes the activities (as listed in Table 2), designating the responsible party or person for each activity. The plan offers the applicant some flexibility in how compliance is ensured. It is a 'living document' that is updated throughout the process — for example, when new parties are added or when additional information becomes available. All parties involved are actively informed about these updates.



The PPAP is one of the documents that will be reviewed by the independent assessor later in the process. There is no fixed format for the PPAP. However, the plan must identify and answer the most important questions so that it is clear how the applicant will manage the most common risks during delivery in order to achieve the intended score.

3.1.5 Appointing a Paris Proof manager

During the design process, it is essential that the actions described in the PPAP are implemented and followed up. Therefore, a Paris Proof manager should be appointed, who is responsible for monitoring these actions and managing the process from design to realisation of a Paris Proof-certified building.

To monitor progress, the Paris Proof manager will create a memo for each project phase in which the current situation, risks and associated mitigation measures are described.

3.2 Design phase

3.2.1 Energy consumption estimate

An essential part of the design process is the creation of a dynamic energy simulation model for the building's main energy consumers, such as climate control systems. This model is used to estimate the expected energy consumption and to test whether the design meets the Paris Proof objectives.

The energy simulation is based on a physical calculation model that simulates the energy flows within the building. This allows different scenarios to be analysed and their impact on energy consumption to be predicted. The model includes:

- **Architectural characteristics** (such as building volume and insulation values)
- **External factors** (such as climate)
- **Technical systems** (such as heating, cooling, ventilation, lighting and appliances)
- **Usage aspects** (such as the expected usage profile and usage functions)

For smaller energy consumers, such as lifts and hot water, additional calculations can be setup using spreadsheets.

Although the simulation model takes many variables into account, it remains an approximation of actual usage. It is therefore important to build in sufficient margins to accommodate any deviations.

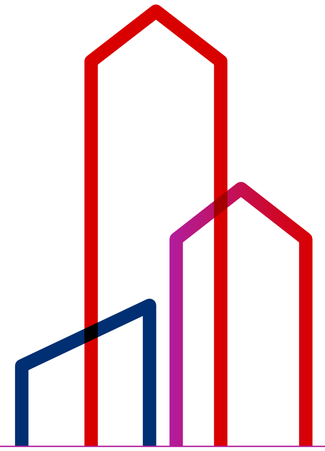
The simulation model fulfils various functions in the different phases of a project:

- **Design phase:** Review of the feasibility of the Paris Proof score and identification and analysis of necessary design adjustments.
- **Tendering and construction phase:** Evaluation of the impact of design changes on energy performance.
- **Tenant fit-out:** Review of fit-out designs against the tenant guideline to ensure that the Paris Proof ambition remains feasible even after commissioning.
- **Completion and monitoring:** Comparison of the simulated energy consumption with the actual measured consumption in the first year of use (and possibly on an ongoing basis). This makes it possible to identify and correct operational inefficiencies at an early on.

To monitor progress, the Paris Proof manager draws up a memo for each project phase in which the current situation, risks and associated mitigation measures are described.

An experienced specialist in dynamic energy simulations performs the simulation. This expert must not only be skilled in modelling, but also understand the operation and control of installations to be able to accurately assess uncertainties and sensitivities in the model. A report must be made of the simulation energy calculation, which must contain at least the following components:

- Input data and assumptions
- Description of the metering (see 3.2.2)
- Simulation results and additional calculations
- Risk analysis
- Disclaimer

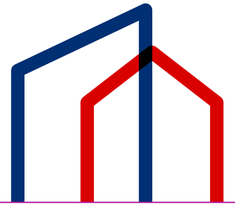


The recommendation is to perform an initial energy calculation during the preliminary design phase and to recalibrate it in each subsequent phase based on design changes and further detailing.

3.2.2 Measurement and monitoring plan

In many existing buildings, it is difficult to gain a strong understanding of the distribution of total energy consumption across the various energy consumers. In new construction and large-scale renovations, the design offers an opportunity to take this into account from the outset. By integrating energy meters and sub-meters, detailed insight into the energy consumption of each consumer can be made available. This insight is crucial for identifying deviations in a timely manner and adjusting where necessary.

For this action, a measurement and monitoring plan must be drawn up, which must include which submeters are to be installed. Energy monitoring must comply with the requirements as described in **BREEAM-NL New Construction and Renovation Utility v6.1.1, ENE 02**, or comparable credit when the guideline is updated to a new version. The simulation calculation must be aligned with the measurement and monitoring plan so that the results can be properly compared and verified.



> The integration of energy meters and sub-meters can provide detailed insight into energy consumption per consumer group.

In addition, a **Building Automation and Control System (BACS)** must be included in all non-residential buildings, in accordance with the requirements of the **Energy Performance of Buildings Directive IV (EPBD IV)**. This system contributes to the efficient management and optimisation of building installations and energy performance.

3.2.3 Independent review of design and energy calculation

Prior to signing the Paris Proof Energy Commitment (see section 3.2.4) the design must be reviewed by an independent assessor. This reviewer must be completely independent of the design team.

For the Paris Proof Energy Commitment, at least one review is required; however, it is recommended that two reviews are carried out. An initial review should be completed in the preliminary design phase, so that there is still sufficient scope to adjust the design, and a second review in the final design phase, when sufficient documentation is available for a detailed review.

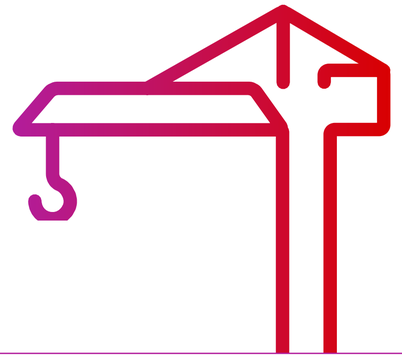
For the purposes of the review, the following documents must be submitted to the design team:

- Paris Proof Action Plan (PPAP)
- Design documents (consisting of at least: drawings, schematics and reports of the mechanical and electrical systems (including control engineering description), architectural floor plans, cross-sections, facade elevations and details, building physics properties)
- Report on the energy simulation and calculation
- Measurement and monitoring plan

The energy simulation and the above documents are reviewed in a review workshop with the energy simulation expert and the MEP engineer(s).

As part of the commitment, a table is requested in which a mitigation strategy is described for each review comment. The results of this review are not binding, but may influence the administrator's assessment when approving or continuing the Paris Proof agreement.

This template must be submitted before submitting the Paris Proof Energy Commitment (see 3.2.4).



3.2.4 Paris Proof Energy Commitment

The Paris Proof Energy Commitment is a voluntary agreement between the applicant and DGBC, in which the the applicant commits to realising the design, construction and commissioning of the building in line with the Paris Proof objectives.

This commitment allows communicating the Paris Proof ambition before the actual certification in external publications, under the name **Paris Proof ambition**. This offers potential tenants and investors greater certainty about the achievement of the energy efficiency objectives.

The following documents must be submitted as an appendix to the Paris Proof Energy Commitment:

- Paris Proof Action Plan
- Completed review form, completed by an independent design reviewer
- Documents as provided to the design reviewer

By involving an experienced facilities manager in the design, for example, through a workshop, valuable practical knowledge can be fed back to the design team.

The commitment is not yet available for the first version of the Guide and will be published by DGBC immediately after completion and incorporated into a future update.

3.2.5 Involve the facilities manager

The person responsible for the day-to-day operation of the building should be involved during the design phase. This ensures that they understand the design intent of the installations, which contributes to a smooth transition from commissioning to operation. This enables them to independently identify and possibly resolve minor malfunctions.

By involving an experienced facilities manager in the design, for example through a workshop, valuable practical knowledge can be fed back to the design team. This enables the team to optimise the design and prevent potential problems in operation.

In addition, the facilities manager can play an important role in shaping the monitoring and commissioning process and in improving the operational processes needed to realise the Paris Proof ambition.

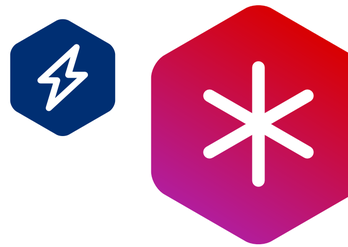
3.3 Preparing construction and tenant agreements

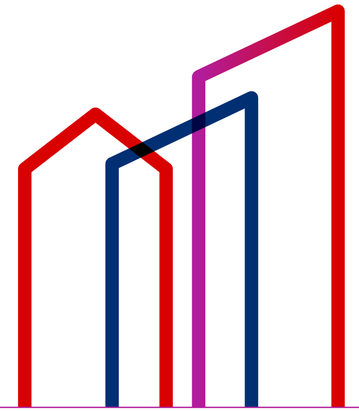
3.3.1 Paris Proof in tendering

At a certain point, the design team's design is handed over to the contractor. It is possible that the contractor may make alternative proposals that affect the energy efficiency of the building. As a result, the final design may differ from the simulated design and may not meet the Paris Proof ambition.

To prevent this, it is essential to include contractual requirements relating to the Paris Proof targets in the specifications. By making both the ambition and the PPAP part of the contractual agreement with the contractor, roles and responsibilities can be clearly agreed to in advance. The tender documents should also include an approval process for proposed alternative systems, including an approval process in relation to the impact on Paris Proof objectives.

In addition, contracts with the contractor must include a period of at least 12 months during which all parties involved remain responsible for their work, with a view of achieving the Paris Proof ambition. This approach is in line with the **Paris Proof Addendum**, in which agreements on the sustainability ambition between tenant and landlord. The addendum can be used as a reference. During this period, the project team must remain available for support during commissioning and to resolve any design or operational issues. The responsibilities of each party in this phase must be explicitly laid down in the contracts.





3.3.2 Supervision and monitoring during construction

Prior to construction, the construction design must be assessed, with specific attention to the impact on the WEii score. Preferably, the design team should be deployed for this, due to their in-depth knowledge of the building. At a minimum, the following aspects must be considered:

- Review of alternative installations submitted by suppliers
- Occasional working visits and reporting
- Review of the construction design
- Inspection of installations upon completion

An energy simulation expert must also be involved to verify that the design has been implemented correctly. If changes are made that affect energy consumption, the energy calculations from the design phase must be adjusted to assess the impact of the changes on the ambition.

3.3.3 Appointing a commissioning manager

Commissioning is a crucial step in achieving a Paris Proof building. In this phase, test procedures and documentation are established to ensure that the building meets the energy performance targets set out in the design phase.

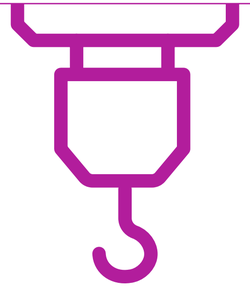
An independent commissioning manager must be appointed to guarantee that the commissioning ctivities are sufficiently comprehensive and rigorous to the design intent. Ideally, this manager should be involved from the end of the design phase (specifically the final design phase) and assesses the design frameworks and the programme of requirements. He or she also draws up the commissioning plan, which must form part of the tender documents sent to the contractor.

3.3.4 Commissioning plan

A comprehensive commissioning plan includes the following components:

- A description and plan for the commissioning of each system, including a series of tests with clear acceptance criteria.
- Development of test methodologies by the contractor, for approval by the relevant consultants.
- Requirements regarding attendance at critical tests and substantive assessment of test results by consultants.
- Air tightness measurement and thermographic examination.
- Documentation of all tests in the **User Manual**.

To demonstrate compliance with this step, the guideline 'BREEAM-NL New Construction – MAN 05 Transfer to management and aftercare' can be used.



Prior to construction, the construction design must be assessed, with specific attention to the impact on the WEii score.

3.3.5 Green Lease contract and technical tenant requirements

A lease agreement aims to facilitate an optimal working environment for tenants but does not always consider the underlying design and energy efficiency of the building. As a result, sustainability measures may be lost during the use phase. In addition, new elements may be introduced that negatively impact energy performance, such as connecting 24/7 cooling water consumption to circuits that were originally only active during office hours.

The project team must establish processes that ensure that tenants' interior design does not compromise the building's Paris Proof score.

Green Lease

A Green Lease is an agreement that sets out the sustainability requirements for tenants and must be drawn up as an appendix to the tenancy agreement. This agreement between landlord and tenant is aimed at minimising the environmental impact during the use and operation of the building. The agreement forms a legal and organisational framework in which both parties commit to achieving and maintaining environmental performance throughout the term of the lease agreement.

DGBC has published a template for agreements between tenants and landlords regarding the achievement of WEii scores at building level, known as the **Paris Proof Allonge**. The Green Lease approach of credit MAN 05 from the BREEAM-NL In-Use scheme also offers additional guidelines.

Every Green Lease, clause or letter of intent is unique and depends on the following points:

- The type of property or building
- The sustainability priorities
- The commercial wishes, needs and budget of the landlord and tenant

As a basis for the Green Lease, a letter of intent is drawn up between the building owner and the future tenants during the design phase, final design (FD) or technical design (TD).

The Green Lease contains at least the following agreements:

- Objective as part of the lease agreement
- Hours of use and type of use
- Requirements for tenants
- Fit-out guidelines for interior design (see below)
- Maintenance and replacement
- Central control via Building Automation and Control System (BACS)
- Mandatory review of the fit-out design

Technical tenant requirements

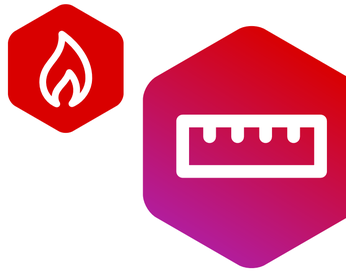
Fit-out guidelines

Because future users are not always familiar with the energy efficiency intentions of the building design, a fit-out guideline must be drawn up. This guideline clarifies the division of responsibilities (demarcation) between landlord and tenant, and indicates which modifications are permitted and which energy performance requirements apply to the interior design. Examples of measures included in the fit-out guide are:

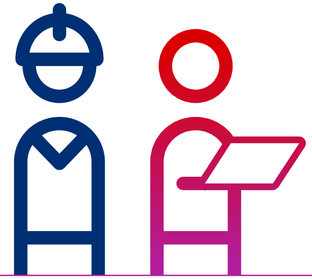
- Sustainability intention of the design in relation to the fit-out
- Requirements for submetering energy consumption
- Minimum efficiency classes for equipment
- Suitable types of systems that can be used
- Review of the fit-out design
- Building management system requirements (see explanation below)

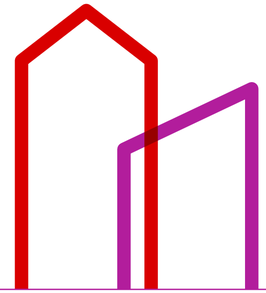
The design team, in particular the installation and sustainability consultants, contributes to the drafting of these guidelines, given their knowledge of building design and Paris Proof requirements. The aim is to offer maximum flexibility for tenants without compromising the building's energy performance.

If a tenant has specific usage requirements, such as longer operating hours, energy simulations can be used to substantiate the need for higher energy efficiency.



DGBC has published a template for agreements between tenants and landlord regarding the achievement of WEii scores at the building level, known as the Paris Proof Allonge.





Building control within the fit-out

In some buildings, the buildings control systems that lie within the demarcation of the tenant are separate and are controlled and maintained by the tenant. This entails risks for the energy efficiency and Paris Proof ambition of the building.

The following measures are important to include in the fit-out guideline:

- A single central building automation and control system (BACS) that controls all systems, including heating, cooling and ventilation (HVAC) control systems located within tenant spaces.
- A high-quality interface between the building's central BACS and the tenants' BACSs.
- The building owner or operator retains control over the control strategies and set points of installations within tenant spaces.
- The building owner sets minimum requirements that tenants must meet regarding control strategies and setpoints.
- The building owner sets minimum maintenance standards for HVAC systems (connected to the central system) within tenant spaces.
- Maintenance of installations within tenant spaces is carried out under the supervision of the building owner.

Review of the fit-out design

To ensure compliance with the agreements in the fit-out guideline, the fit-out design will be reviewed prior to construction. Tenants provide sufficiently detailed information about their proposed design. The design team, and simulation expert, assess these designs against the fit-out guidelines to ensure that no tenant causes excessive energy consumption that could negatively impact the Paris Proof ambition.

> Tenant fit-out design should comply with the agreed fit-out guidelines to ensure Paris Proof ambitions can be met

If a design receives a negative assessment, the tenant must modify the design and reduce the energy consumption. The simulation model is updated based on all tenant fit-out designs. The outcome of the simulation determines whether the fit-out is accepted or whether further adjustments are required.

3.4 Construction phase

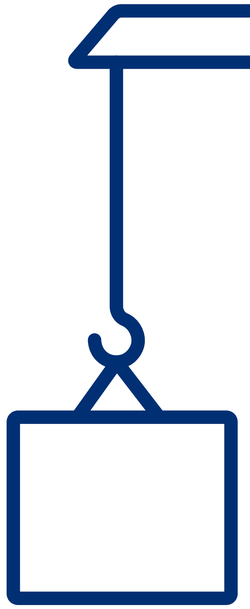
3.4.1 General activities during the construction phase

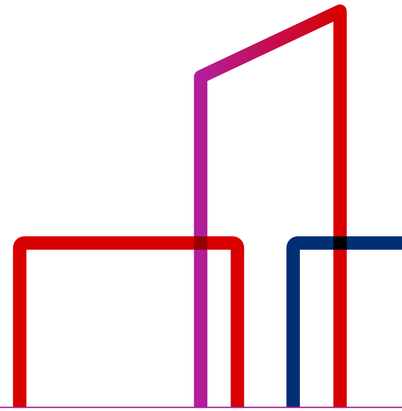
During the construction phase, it must be ensured that the agreements in the commissioning plan for supervision and control during construction are carried out. This includes:

- Compliance with all commissioning activities from the commissioning plan, including drafting user manuals and training courses
- Carrying out supervision and monitoring during construction
- Reviewing energy calculations and simulations based on design changes

3.4.2 Establishing performance contracts with the facilities manager

Ultimately, the building will be handed over to the facilities manager, who must be able to manage it efficiently. This is particularly important because in order to achieve and maintain a certified WEii score with Paris Proof classification, deviations from the regular optimal course of action are made in facility management. The facility management contract must include obligations to comply with the Paris Proof ambition during management and monitoring. This ensures optimal management and provides insight into the performance of facility management. Preferably, the obligations should be laid down in a performance contract. A performance contract for building management specifies the responsibilities for delivering measurable results and performance, such as a certain level of comfort or energy consumption, rather than simply specifying the performance of tasks.





3.4.3 Appointing a party for energy monitoring

During the usage phase, it is very important that energy consumption is monitored in detail. A party must be appointed to carry out the activities.

3.4.4 Monitoring and reporting strategy

A monitoring and reporting strategy must be created prior to completion. This will enable the actual energy consumption during operation to be compared monthly with the targets, based on hourly data from the building management system. This allows deviations to be detected, such as excessive consumption, incorrect sensor values, abnormal operating hours or malfunctions in meters/ sensors. The strategy must also describe how deviations are reported and resolved.

3.4.5 Independent review of the construction design

Prior to construction, an independent reviewer must review the entire construction design against the Paris Proof ambition. This person will also assess the dynamic energy simulation to verify whether the design has been correctly implemented in the model and whether the results are reliable. This reduces the risk of not achieving the WEii score with Paris Proof target once the building is completed and confirms that the commissioning plan has been correctly applied.

3.5 Use phase

During the use phase, adequate maintenance is important to ensure sustainable management, well-functioning installations and a good comfort experience for users.

3.5.1 Recalibrating energy simulations and calculations

During the use phase, the energy simulation and calculations are recalibrated to the installed fit-out and verified based on actual building data. During the first year of use, the simulation expert must have access to the BACS to monitor energy consumption. This enables the consultant to identify operational bottlenecks and assess the performance of facility management. Direct access to detailed BACS data increases the accuracy of the simulation model and enables targeted optimisations.

3.5.2 Fit-out assessment

Upon completion and before commissioning, a check is carried out to ensure that the fit-out complies with the fit-out guidelines.

3.5.3 Quarterly energy monitoring reports

The first year of building operation is crucial for achieving the Paris Proof ambition. During this phase, the applicant must maintain sufficient control to ensure that the energy performance truly matches the design ambition.

The appointed energy monitoring party reports o the landlord on a quarterly basis, from the moment of commissioning until the certified WEii score is achieved. These reports provide insight into progress and are an important tool for making timely adjustments towards the intended ambition.

The MEP consultant and facilities manager make proposals for energy savings, for example by adjusting temperature settings, flow rates, operating hours or load. These proposals are tested in the simulation model to evaluate the impact on comfort and energy consumption. This ongoing process makes it possible to continuously optimise operations during the initial period.

3.5.4 WEii certification

An application for certification is submitted to a WEii licence holder who has not been involved in the construction, renovation or transformation process of the building.

3.5.5 Continuous monitoring

During operation, a Paris Proof report with WEii certificate must be drawn up annually to demonstrate that the building continues to comply with the Paris Proof Energy Commitment.

During the use phase, it is very important that energy consumption is monitored in detail.

WEii

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