

Frequently Asked Passive House Questions

General

What is the elevator pitch on Passive House?

Passive House is a green building energy standard that is the most reliably effective approach to designing healthy, resilient, affordable, and comfortable buildings. Starting with an optimized enclosure, it focuses on insulating a building (like a thermos) to reduce heating and cooling loads and ultimately reduce energy usage and carbon emissions by up to 80% compared to a standard code building. While it is the most rigorous energy efficiency building energy standard in the world, it is performance-based, and not prescriptive, which allows flexibility in design, while achieving predicted outcomes every time.

What are the benefits of living or working in a Passive House building?

Passive House buildings provide many benefits to occupants and owners. Its well-insulated enclosure keeps indoor air temperatures comfortable year-round while reducing the energy used for heating and cooling by up to 90%. These dramatic energy savings makes operation and maintenance much more affordable and protects people from price shocks. There are no drafts and provides excellent thermal and acoustic comfort. It is a safer and more resilient building in extreme weather & storms, allowing you to shelter in place until the utilities resume operation. It is a healthier building with lower incidents of allergies and asthma because the ventilation system supplies filtered fresh air while exhausting the stale air, continuously removing indoor pollutants and preventing outdoor pollutants from entering. Passive House ensures fundamental high performance for all people.

Do certain populations benefit more from Passive House than others?

While everyone can benefit from PH improvements, it can be especially meaningful for low-income communities for several reasons: (1) In dozens of major U.S. cities, low-income neighborhoods are more likely to be hotter than their wealthier counterparts, which can have dire and sometimes deadly health consequences; (2) Poorer communities tend to be exposed to higher concentrations of air pollution compared to richer communities; and (3) High energy utility costs can have significant negative economic and health consequences for low-income families. Energy cost burden (defined as paying more than 6% of income towards energy costs) disproportionately affects low-income individuals. One study found that 78% of families earning below 200% of the Federal Poverty Line (FPL) were energy cost burdened. Building to PH standards can help address all three of these issues (more stable indoor temperatures, improved air quality, reduced energy costs), resulting in a better quality of life and cost savings for low income individuals.

What climates does Passive House work in?

Passive House works in all climates, from the very cold arctic, to the hot and humid tropics.

Carbon Emissions

Does Passive House help with decarbonization?

Yes, building greenhouse gas emissions are driven by operation energy and embodied energy. (Embodied energy is the energy consumed by all of the processes associated with the building's construction and maintenance.) Passive House is the most effective method at reducing operational energy, crushing space heating demand, and operational energy use, along with the associated emissions.

How does embodied carbon factor into building to Passive House standards?

Passive House Certification does not have an embodied carbon emissions requirement. However, the Passive House methodology can (and should) support making low-to-negative embodied carbon buildings. The Passive House Network is actively supporting building teams in achieving such reductions with the [PHribbon](#), a Passive House energy model plug-in that allows designers to actively incorporate embodied carbon emissions calculations into the design process and provide comprehensive snapshots of a building's potential climate impact.

Costs, Financing & Investor Due Diligence

Is there a cost premium?

There is not necessarily a cost premium. Costs to achieve Passive House depend on the developer/owner's basis of design. For a majority of Passive House buildings, the premium can be anywhere from 0%-7%, inclusive of added soft costs for inspections and consultants, with the higher range typically on a developer's first Passive House project. The premium can often be covered by the resulting energy savings. As the availability of PH materials increases and technology improves, costs have decreased over time and continue to trend downward. [Read PHN report on cost.](#)

Does building Passive reduce maintenance and operations costs?

Regarding operations costs, a 40%-50% improvement can be achieved. To realize the maximum gains from the operational efficiencies, however, there needs to be an investment in asset management and maintenance including maintenance personnel training. However, the cost of not implementing PH could be more expensive, as a PH building is less likely to have decay, moisture, and mold issues due to the superior envelope, and generally provides more durability. [Read this report.](#)

Do investors care about Passive House? Does it increase the value of my building?

PH buildings use significantly less energy than those built to minimum codes reducing ongoing operating costs. Additionally, there is a true economic benefit to building Passive House as exit values can be heavily influenced by the increased costs of excluding energy reduction measures in existing buildings. This becomes more impactful as cities and local municipalities enact laws to reduce carbon emissions, such as Local Law 97 in NYC which has a financial penalty for non-compliance.

Resilience and carbon neutrality have increasingly become significant criteria for evaluation in the investment space. In recent years ESG – Environmental, Social, and Governance – factors are being evaluated alongside financial factors in investment decisions. Investors have begun to rely heavily on various benchmarking standards that take the environmental impact of the assets into consideration. One of the most relied-upon standards is GRESB – the Global Real Estate Sustainability Benchmark which ranks/scores Passive House.

Do GRESB and other investor benchmarks rank Passive House?

Yes, Passive House and EnerPHit certifications are recognized by GRESB. [See the listings.](#)

Are there government subsidies or grants available for building Passive?

Many municipalities and states offer financial programs to help offset the cost of building low carbon emitting developments, though they are not typically required to be Passive House.

Building Team Training & Building Certification

What is the learning curve to building to PH standards? Do contractors know how to build Passive House?

Like any green certification, completing it for the first time has a learning curve. There are many training resources including the [Certified Passive House Designer course](#) offered by The Passive House Network. It is strongly encouraged, though not required, that project leads from the design, development, and construction sides have taken some training in Passive House.

Do I have to “certify” as a Passive House or can I just build a Passive House-like building?

Pursuing Passive House certification is a proven way to ensure that your building performs as intended, and maximum benefits are actualized. Projects pursuing Passive House certification consistently outperform those claiming to be designed to the standard. The inspections and testing required for certification result in a very high level of quality performance. [Read the report.](#)

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Passive House certification can also be a critical path in obtaining project approval and financial incentives. Many building codes now recognize Passive House certification as a compliance pathway from Massachusetts to Washington State. Significant direct financial incentives are also available to certified Passive House buildings, offered by entities such as MassSave, NYSERDA, Xcel Energy and others. And Passive House certification can be critical in obtaining low-income housing development tax credits.

If I'm already doing LEED certification what does Passive add? And what doesn't Passive address?

While LEED provides guidance on energy-efficient measures, it does not set a limit to the amount of energy a building can use, which Passive House does. The level of testing and inspections for Passive House is also more exacting than that required by LEED. Consequently, Passive House provides a more reliable and predictable high-performance result. Passive House certification supports and compliments LEED standards.

Who do I contact to start the certification process? And when should we begin?

There are over 13 organizations with more than 25 building certifiers working in the US. You can contact them directly, obtain competitive bids and find a good working fit. [See the current list of certifiers on our Building Certification page.](#)

You should begin the process at the start of the building project planning. Put the building certifier expertise to work for you early and avoid rookie mistakes, optimized the design and hit your performance and cost goals. [Read more about reasons for working with certifiers.](#)

Can residents still open their windows in a Passive House? How do they get fresh air?

Natural ventilation is a core Passive House strategy and is encouraged as part of the building design, so yes, occupants can open windows. However, because natural ventilation cannot be relied upon under all circumstances, Passive House provides high-quality filtered fresh air mechanical ventilation for all occupied spaces, that can, and often does, operate 24/7.

Occupancy & Construction Types

Is Passive House just a residential standard or can it be used for commercial, industrial or mixed-use buildings too?

PH design standard is flexible, and can be applied to any building or size. In addition to varied materials, and mechanical systems, completed certified projects are not just residential and include a hospital, assisted living, car dealership, textile factory, a dentist's office, schools, dormitories and more.

Are there any construction types that can't be built as Passive? Can I build a wood frame building if building Passive?

Passive House is performance based, and not prescriptive, therefore Passive House buildings can use any construction type and cladding.

Are there preferred heating & cooling mechanical systems for Passive House buildings?

Passive House doesn't require specific mechanical systems, but because it does encourage electrification, Passive House buildings are often incorporating mechanical strategies that eliminate on-site fossil fuel combustion. A growing and common strategy is to utilize some form of heat pump technology, whether air, water or ground sourced – typically providing space cooling and heating from the same system.

Existing Buildings

Can I retrofit an existing building to Passive House standards?

Yes, **EnerPHit** is the Passive House Institute's retrofit standard. You can retrofit the building all at once or use a phased approach for situations when components are not yet at the end of their life.

Mechanical Systems

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Do I have to build an all-electric building?

Passive House does not require an all-electric building, but it encourages electrification to align building services with a 100% renewable energy future, avoids stranded mechanical systems, and minimizes future system replacement costs.

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Operations

Can I advertise to potential residents that their utility costs will be lower than a non-Passive House building?

Advertising and marketing of lower utility bills should be based on data and evidence. We strongly encourage that Property Management companies gather and track individual tenant utility data to ensure that the PH program is effectively reducing usage. If your building is operating as designed, and your tenants pay for their heating and cooling, they should see a significant reduction in their utility costs, in addition to more stable indoor temperatures, a more quiet atmosphere, and better air quality.

Note: Utility cost savings are based on heating and cooling loads – landlords cannot predict or guarantee costs for other appliances and demands that are driven and controlled by tenant use. (computers, grow lights, etc)

How do I know if my Passive House building is successful?

Success can be assessed quantitatively & qualitatively. The simplest measures are the total annual utility usage and how it compares to the design's calculated predicted performance. Data can be measured more granularly from individual "spot" sensors to comprehensive BMS systems, for not just energy but for indoor air quality too.

Qualitatively, occupants should feel thermal comfort and stable temperatures without drafts, with fresh air and related reductions in illness. It should be acoustically separate from outdoor noise, with quiet internal mechanical systems. It should feel peaceful.

Should my building super be trained specifically to manage a Passive House?

Yes.

Find out more and get started!

