

Commission to Increase Housing Opportunities in Maine by Studying  
Land Use Regulations and Short-term Rentals

Oct. 3, 2022 Meeting

**LD 1656, “An Act To Promote Energy-efficient Affordable Housing” (Sen. Millett)**

*Effective Aug. 8, 2022 (non-emergency)*

P.L. 2021, ch. 718 changes the powers and duties of the Maine State Housing Authority (MaineHousing) to: Condition approval of funding of a housing project upon an applicant's compliance with standards and requirements under section 4726 (below criteria);

P.L. 2021, ch. 718 requires that:

- MaineHousing requires that construction projects funded by MaineHousing meet the standards of at least one of the following:
  - A set of design principles used to attain a quantifiable and rigorous level of energy efficiency within a specific quantifiable comfort level, as determined by a national passive house institute or an international passive house association; (**Passive House – see p. 2**)
  - A 3rd-party green building certification program that is a globally recognized standard for the design, construction and operation of high-performance green buildings and neighborhoods, as established by a national green building council; (**LEED certified – see p. 3**)
  - A living building program with site, water, energy, health, materials, equity and beauty standards as established by an international institute; (**Living Building – see p. 4**) or
  - A 3rd-party-recognized certification or state program that is substantially similar to a certification system such as those above and that is approved by the Maine State Housing Authority.
- MaineHousing must also ensure that construction projects funded by MaineHousing:
  - Use all-electric equipment and systems or other non-fossil fuel systems for heating, domestic hot water, cooking and cooling needs. Backup and secondary systems may use other fuels, including fossil fuels;
  - Provide infrastructure for the installation of electric vehicle charging stations for resident parking facilities or provide for electric vehicle charging; or
  - Provide infrastructure for the installation of solar photovoltaic systems and energy storage where appropriate, including providing for sufficient interior space to allow for solar photovoltaic inverters and energy storage.
    - **Note: MaineHousing can provide limited waiver.** MaineHousing may provide a limited waiver to these requirements for specific and extenuating circumstances where local conditions limit the ability of the construction project to comply with these requirements.
- MaineHousing shall adopt rules (routine technical – not requiring legislative review) by Jan. 1, 2024.
- MaineHousing must collaborate with the Efficiency Maine Trust on program incentives to support the affordable implementation of the housing design standards and requirements within available existing resources.

Oct. 3, 2022 Meeting

# Passive House<sup>1</sup>

## About Passive House - What is a Passive House?

Passive House is a building standard that is truly **energy efficient**, **comfortable** and **affordable** at the same time.

Passive House is not a brand name, but a tried and true construction concept that can be applied by anyone, anywhere.

Yet, a Passive House is more than just a low-energy building:

- Passive Houses allow for space heating and cooling related energy savings of up to 90% compared with typical building stock and over 75% compared to average new builds. Passive Houses use less than 1.5 l of oil or 1.5 m<sup>3</sup> of gas to heat one square meter of living space for a year – substantially less than common “low-energy” buildings. Vast energy savings have been demonstrated in warm climates where typical buildings also require active cooling.
- Passive Houses make efficient use of the sun, internal heat sources and heat recovery, rendering conventional heating systems unnecessary throughout even the coldest of winters. During warmer months, Passive Houses make use of passive cooling techniques such as strategic shading to keep comfortably cool.
- Passive Houses are praised for the high level of comfort they offer. Internal surface temperatures vary little from indoor air temperatures, even in the face of extreme outdoor temperatures. Special windows and a building envelope consisting of a highly insulated roof and floor slab as well as highly insulated exterior walls keep the desired warmth in the house – or undesirable heat out.
- A ventilation system imperceptibly supplies constant fresh air, making for superior air quality without unpleasant draughts. A highly efficient heat recovery unit allows for the heat contained in the exhaust air to be re-used.

### Passive House – building for energy efficiency, comfort and affordability

Typical heating systems in Central Europe, where the Passive House Standard was first developed and applied, are centralised hot water heating systems consisting of radiators, pipes and central oil or gas boilers. The average heating load of standard buildings in this area is approximately 100 W/m<sup>2</sup> (approx. 10 kW for a 100 m<sup>2</sup> apartment). The Passive House concept is based on the goal of reducing heat losses to an absolute minimum, thus rendering large heating systems unnecessary (see image 1). With peak heating loads below 10 W per square meter of living area, the low remaining heat demand can be delivered via the supply air by a post heating coil (see box below). A building that does not require any heating system other than post air heating is called a Passive House; no traditional heating (or cooling) systems are needed.

### Passive Houses around the world

The Passive House concept itself remains the same for all of the world’s climates, as does the physics behind it. Yet while Passive House principles remain the same across the world, the details do have to be adapted to the specific climate at hand. A building fulfilling the Passive House Standard will look much different in Alaska than in Zimbabwe.

---

<sup>1</sup> Information from Passive House Institute.

[https://passivehouse.com/02\\_informations/01\\_whatisapassivehouse/01\\_whatisapassivehouse.htm](https://passivehouse.com/02_informations/01_whatisapassivehouse/01_whatisapassivehouse.htm)

Oct. 3, 2022 Meeting

## LEED Rating System<sup>2</sup>

### Green building leadership is LEED

LEED provides a framework for healthy, efficient, carbon and cost-saving green buildings. LEED certification is a globally recognized symbol of sustainability achievement and leadership.

#### How LEED works

LEED certified buildings save money, improve efficiency, lower carbon emissions and create healthier places for people. They are a critical part of addressing climate change and meeting ESG goals, enhancing resilience, and supporting more equitable communities.

To achieve LEED certification, a project earns points by adhering to prerequisites and credits that address carbon, energy, water, waste, transportation, materials, health and indoor environmental quality. Projects go through a verification and review process by GBCI and are awarded points that correspond to a level of LEED certification: Certified (40-49 points), Silver (50-59 points), Gold (60-79 points) and Platinum (80+ points).



**Platinum**

80+ points earned



**Gold**

60-79 points earned



**Silver**

50-59 points earned



**Certified**

40-49 points earned

#### LEED system goals

LEED is a holistic system that doesn't simply focus on one element of a building such as energy, water or health, rather it looks at the big picture factoring in all of the critical elements that work together to create the best building possible.

The goal of LEED is to create better buildings that:

Reduce contribution to  
global climate change

Protect and restore water resources

Promote sustainable and  
regenerative material cycles

Enhance individual human health

Protect and enhance biodiversity  
and ecosystem services

Enhance community quality of life

Of all LEED credits, 35% of the credits in LEED are related to climate change, 20% of the credits directly impact human health, 15% of the credits impact water resources, 10% of the credits affect biodiversity, 10% of the credits relate to the green economy, 5% of the credits impact community and 5% of the credits impact natural resources. In [LEED v4.1](#), a majority of the LEED credits are related to operational and embodied carbon. [Learn more.](#)

---

<sup>2</sup> Information from the U.S. Green Building Council: <https://www.usgbc.org/leed>.

Oct. 3, 2022 Meeting

## Living Building<sup>3</sup>

The Living Building is made up of 7 “petals”:

1. Place: *restoring a healthy interrelationship with nature.*
2. Water: *creating developments that operate within the water balance of a given place and climate.*
3. Energy: *relying only on current solar income.*
4. Health + Happiness: *creating environments that optimize physical and psychological health and well-being.*
5. Materials: *endorsing products that are safe for all species through time.*
6. Equity: *supporting a just and equitable world.*
7. Beauty: *celebrating design that uplifts the human spirit.*

Living Buildings are:

- Regenerative buildings that connect occupants to light, air, food, nature, and community.
- Self-sufficient and remain within the resource limits of their site.
- Create a positive impact on the human and natural systems that interact with them.

---

<sup>3</sup> Information provided by the Living Building Challenge: <https://living-future.org/lbc/>.