



Passive House Institute US

The **PHIUS+ 2015 Passive Building Standard** released by Passive House Institute US (PHIUS) in 2015 is the first and only passive building standard that is based upon climate-specific comfort and performance criteria. It is internationally applicable and aimed at presenting an affordable solution to achieving the most durable, resilient, and energy-efficient building possible for a specific location. The standard was developed in cooperation with Building Science Corporation under a U.S. Department of Energy (DOE) Building America Grant as a baseline for **zero energy buildings**.

**The PHIUS+ passive building certification criteria:**

This is a voluntary program recognizing buildings that comply with PHIUS+ 2015 standards. In the residential sector, ENERGY STAR, EPA Indoor airPLUS, and Zero Energy Ready Home (ZERH) specifications are **prerequisites** to the program. Key requirements beyond those programs include:

1. Space conditioning maximum requirements - set to optimize the building enclosure.
2. Source energy requirement - set to minimize overall energy use and carbon footprint.
3. Air-tightness requirement and moisture design criteria - set to ensure building durability.

Specific performance requirements are summarized in the table below:









	Heating Demand/Load*	Cooling Demand/Load*	AIR-TIGHTNESS (cfm50/sf envelope)	Source Energy Demand	Renewable Generation for Source Zero
<b>SINGLE FAMILY</b>	1 - 16.8 kBtu/ft <sup>2</sup> .yr 0 - 7.6 BTU/hr.ft <sup>2</sup>	1 - 23.4 kBtu/ft <sup>2</sup> .yr 1.3 - 9.5 BTU/hr.ft <sup>2</sup>	0.05	6200 kWh/person.yr	>Source Energy Demand
<b>COMMERCIAL</b>				38 kBtu/ft <sup>2</sup> .yr	>Source Energy Demand
<b>MULTIFAMILY</b>			0.08**	6200 kWh/person.yr / 38 kBtu/ft <sup>2</sup> .yr	>Source Energy Demand
<b>RETROFIT</b>	As above, + allowance for existing thermal bridges	As above, + allowance for existing thermal bridges	0.05 / 0.08**		

\*Maximum climate specific targets for each individual project  
 \*\*Buildings with 5 stories+, non-combustible construction

Summary of other recommendations:

1. Window  $U_{w\text{ install}}$  -values 0.4 – 0.08 BTU/hr. ft<sup>2</sup> °F (varies by climate)
2. Ventilation system with heat and/or moisture recovery with >53%-95% efficiency and efficient fan @ 0.27-2.23W/cfm (vary by climate)
3. Thermal bridge-free construction <0.006 BTU/hr. ft °F

PHIUS+ 2015 and Source Zero Certification are the next steps in the DOE High-Performance Home Staircase, shown below.

					Source Zero Renewable Energy System	
					Balanced Ventilation HRV/ERV	Balanced Ventilation HRV/ERV
					SOLAR READY <small>Depends on climate</small>	SOLAR READY ALWAYS
					Eff. Comps. & H <sub>2</sub> O Distrib	Eff. Comps. & H <sub>2</sub> O Distrib
					 EPA Indoor Air Package	 EPA Indoor Air Package
					Ducts in Condit. Space	Ducts in Condit. Space
		HVAC QI w/WHV	HVAC QI w/WHV	HVAC QI w/WHV	Micro-load HVAC QI	Micro-load HVAC QI
		Water Management	Water Management	Water Management	Water Management	Water Management
		Independent Verification	Independent Verification	Independent Verification	Independent Verification	Independent Verification
IECC 2009 Enclosure	IECC 2012 Enclosure	IECC 2009 Enclosure	IECC 2012 Enclosure	IECC 2012/15 Encl./ES Win.	Ultra-Efficient Enclosure	Ultra-Efficient Enclosure
HERS 85-90	HERS 70-80	HERS 65-75	HERS 55-65	HERS 48-55	HERS 35-45	HERS < 0
 <b>IECC 2009</b>	 <b>IECC 2012</b>	 <b>ENERGY STAR v3</b>	<b>ENERGY STAR v3.1</b>	 <b>ZERH</b>	 <b>PHIUS+ PHIUS+</b>	 <b>PHIUS+ SourceZero</b>

Additional information on PHIUS+ 2015 certification requirements and recommendations, as well as the certification process and costs, can be found in the **PHIUS+ Certification Guidebook**.