



Passive House Institute US

## New Modeling Protocol for PHIUS+ 2018

In late 2018, a new version of WUFI Passive will be released that includes all PHIUS+ 2018 protocol. Until then, follow instructions in this document to model your project under the PHIUS+ 2018 path.

Accepted WUFI Passive Versions: v3.1.1.25 and later

**0. Case 1 > Certificate Criteria:** Use PHIUS+ 2015 until the PHIUS+ 2018 mode is available.

### 1. Localization/Climate:

Input project UTC. If unknown, search here:

<https://www.timeanddate.com/worldclock/timezone/utc>

### 2. Localization/Climate > Space Conditioning Target Data:

Update Space Conditioning Targets using the new PHIUS+ 2018 target calculator:

<http://www.phius.org/phius-certification-for-buildings-products/project-certification/phius-2018-getting-to-zero>

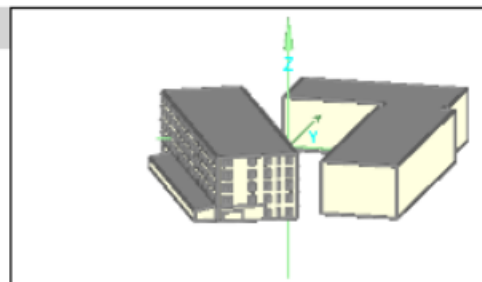
Envelope/iCFA: Take envelope area and floor area from the model report.

The case below would equate to  $(56200/53167) = 1.057$

Occupancy (ft<sup>2</sup>/person): Take floor area (iCFA) divided by total occupancy in the building. For the example case below  $(53167/157) = 338.6$

#### BUILDING INFORMATION

Category:	Residential
Status:	In planning
Building type:	New construction
Year of construction:	
Units:	59
Number of occupants:	157 (Design)



#### Boundary conditions

Climate:	MINNEAPOLIS/CRYSTAL MN
Internal heat gains:	1.6 Btu/hr ft <sup>2</sup>
Interior temperature:	68 °F
Overheat temperature:	77 °F

#### Building geometry

Enclosed volume:	624,036 ft <sup>3</sup>
Net-volume:	420,952 ft <sup>3</sup>
Total area envelope:	56,200.1 ft <sup>2</sup>
AV ratio:	0.1 1/ft
Floor area:	53,167 ft <sup>2</sup>



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### 3. Localization/Climate > Source energy/CO2 Factor:

Adjust the selection to 'User Defined'. Enter Source Energy Factor for Electricity and Natural gas. All other entries can be input as '0' if not used.

#### Natural Gas:

Source Energy Factor: 1.1

CO2 Emissions Factor: 73.28 g/kBTU

#### Electricity Mix:

**United States:** Source Energy Factor: 2.8

**Canada:** Source Energy Factor: 1.96

CO2 Emissions Factor: 199.31 g/kBTU

Localization Climate Source energy/CO2-Factor		
Selection User defined		
Name	Source energy factor [Btu/Btu]	CO2 emission factor [g/kBtu]
Oil	0	0
Natural Gas	1.1	73.28
LPG	0	0
Hard Coal	0	0
Wood	0	0
Electricity Mix	2.8	199.31
Electricity from photovoltaics	0	0
Hard Coal CGS 70% CHP	0	0
Hard Coal CGS 35% CHP	0	0
Hard Coal HS 0% CHP	0	0
Gas CGS 70% CHP	0	0
Gas CGS 35% CHP	0	0
Gas HS 0% CHP	0	0
Oil CGS 70% CHP	0	0
Oil CGS 35% CHP	0	0
Oil HS 0% CHP	0	0

### 4. PH Case > Additional Data:

Air-tightness requirement is 0.06 cfm50/ft2 for most buildings – this value may be used instead of 0.05 cfm50/ft2. For buildings 5 stories and above of non-combustible construction, the limit remains at 0.08 cfm50/ft2.

### 5. Ventilation/Rooms > Summer Ventilation:

If a cooling system is planned, no natural ventilation may be included in the model. Please ensure there is a '0' for ACH via natural ventilation (day), and ACH via natural ventilation (night).

Utilization pattern	Rooms ventilation	Summer ventilation	Exhaust ventilation
Summer ventilation			
Summer HRV/ERV recovery mode		Temperature controlled bypass	
ACH via natural ventilation (day) [1/hr]		0	
ACH via natural ventilation (night) [1/hr]		0	

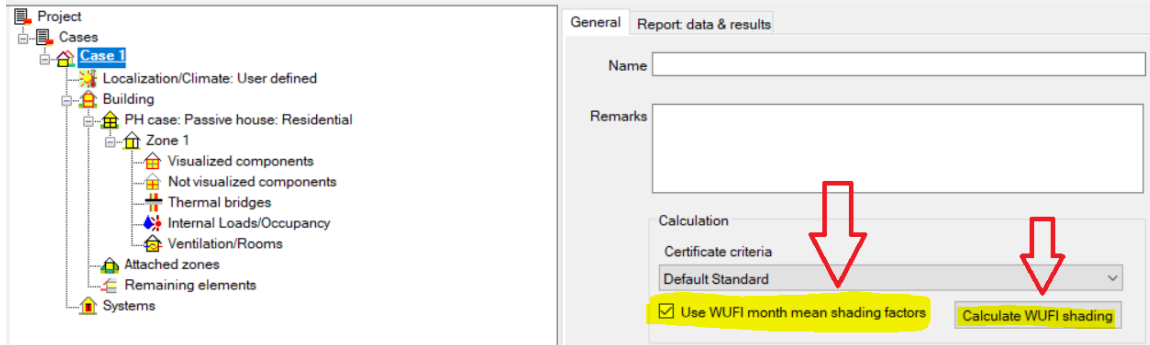


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## 6. Case 1 > General

WUFI Passive has updated the shading algorithm to include shading from all visualized components, including the building geometry (overhangs, reveals, building shape, etc) and neighboring objects that are visualized as 'remaining elements' in the WUFI Passive model. More information in [Presentation here](#).

To use this shading update, the shading uses a pre-processor to calculate which may take up to 1 minute. Complete this by clicking 'Calculate WUFI Shading', and ensure that the box is checked for 'Use WUFI month mean shading factors'.



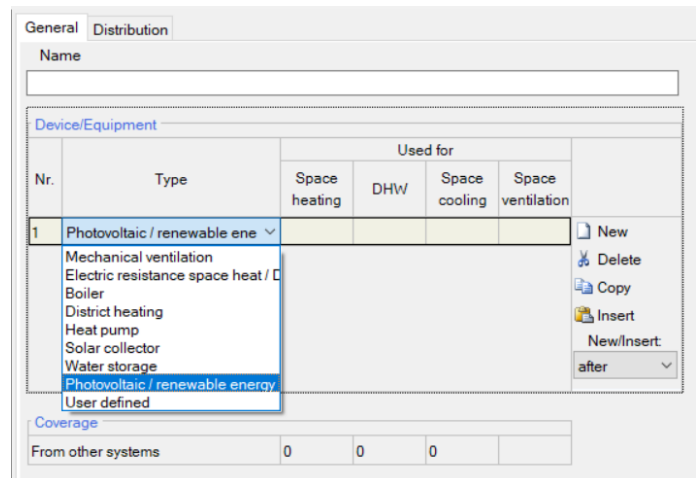
## 7. Follow the instructions in the 'PHIUS Hot Water Calculator' linked in this document:

[http://www.phius.org/PHIUS+2018/PHIUS+2018\\_pilot\\_v0.1.pdf](http://www.phius.org/PHIUS+2018/PHIUS+2018_pilot_v0.1.pdf)

Follow the steps in this document to update your WUFI Passive model to the new DHW calculation protocol. This external calculator is built into WUFI Passive in the next release.

## 8. Systems > General > Photovoltaics:

For the pilot version, any renewable energy, on-site or offsite, must be entered as this device type.





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Please add a new device for each individual type of renewable energy generation, device named as shown below. Select 'User Defined' in the 'Selection On-site Utilization' dropdown. Enter the predicted annual production in kWh/yr and follow the on-site utilization values shown below.

**Name**

**Selection onsite utilization**

User defined
▼

**Parameters**

**Required data**

Photovoltaic / renewable energy [kWh/yr]	
Onsite utilization [-]	

Type	kWh/yr	On-site Utilization
On-site renewable	Varies	1
Directly owned off-site renewable	Varies	1
Community renewable energy	Varies	1
Virtual Power Purchase Agreements	Varies	1
Green-E Certified Renewable Energy Certificates (RECs)	Varies	0.2

**9. Note:** The PHIUS+ 2018 source energy target is:

Residential: **3840 kWh/person/yr**  
 Non-Residential: **34.8 kBTU/ft<sup>2</sup>.yr**

The 'target' line in the results screen in the software is not updated under 3.1.1.25, but the project must meet these marks.