



Passive House Institute US

New Modeling Protocol for PHIUS+ 2018

Accepted WUFI Passive Versions: v3.2 and later

0. Case 1> Certificate Criteria: PHIUS+ 2018

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

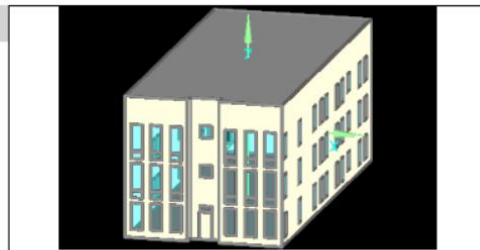
calculator: <http://www.phius.org/phius-certification-for-buildings-products/project-certification/phius-2018-getting-to-zero>

Envelope/iCFA: Take envelope area and floor area. Double check these values in the report.

Occupancy (ft²/person): Take floor area (iCFA) divided by total occupancy in the building. Double check these values in the report.

BUILDING INFORMATION

Category:	Residential
Status:	In planning
Building type:	New construction
Year of construction:	
Units:	6
Number of occupants:	24 (Design)
Occupant density:	358.2 ft²/Person



Boundary conditions

Climate:	CHICAGO MIDWAY AP IL
Internal heat gains:	1.2 Btu/hr ft²
Interior temperature:	68 °F
Overheat temperature:	77 °F

Building geometry

Enclosed volume:	74,005 ft³
Net-volume:	79,587.1 ft³
Total area envelope:	14,107.5 ft²
Area/Volume Ratio:	0.2 1/ft
Floor area:	8,595.8 ft²
Envelope area/iCFA:	1.641



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3. 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.

4. 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	

5. 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, check the box for 'Use WUFI Mean Monthly Shading' under the 'Case' branch. Required for PHIUS+ 2018.

Project

- Cases
 - Case 1
 - Localization/Climate: CHICAGO MIDWAY AP IL
 - Building
 - PH case: Passive house: Residential
 - Zone 1: Whole Building
 - Visualized components
 - Component 1
 - Component 2
 - Component 3
 - Component 4: (SOUTH, Floor 2, Fixed)
 - Component 5: (SOUTH, Floor 1, Fixed)
 - Component 6: (SOUTH, Floor 1, Casement)
 - Component 7: (SOUTH, Floor 3, Fixed)
 - Component 8: (SOUTH, Floor 3, Casement)
 - Component 9: (SOUTH, Floor 2, Casement)

General Report: data & results

Name

Remarks

Calculation

Certificate criteria

PHIUS+ 2018

Use WUFI month mean shading factors



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6. Use updated Hot Water Piping Calculator

Follow the steps in this document to update your WUFI Passive model to the new DHW calculation protocol.

Samples here: <http://www.phius.org/software-resources/wufi-passive-and-other-modeling-tools/calculators-and-protocols>

General Distribution

Hydronic heating DHW Cooling Ventilation Supportive device / auxiliary energy

General Hot water piping

DHW distribution

Setting	In conditioned space	Outside conditioned space 1	Outside conditioned space 2
Design flow temperature [°F]	120		

Circulation pipes

Length of circulation pipes [ft]			
Heat loss coefficient per ft pipe [Btu/hr ft °F]	
Temperature of the room the pipes pass through [°F]			
Daily running hours of the circulation [hr]			

Individual pipes

Calculation method Hot water piping calculator (unit method)

General Distribution

Hydronic heating DHW Cooling Ventilation Supportive device / auxiliary energy

General Hot water piping

Preselection effectiveness Standard flow

Hot water fixture effectiveness [-] 1

All pipes are insulated

Count of units or floors PH case setting

Trunk

Nr.	Name	Demand recirculation	Pipe material	Piping diameter [in]	Piping length [ft]	Heat capacity [Btu/°F]	Count units or floors	Volume [oz]	Cumulative volume [oz]	
1		<input checked="" type="checkbox"/>	Copper M	3/8		0	6/3	0	0	New Delete

Branch: Trunk 1

Nr.	Label	Pipe material	Piping diameter [in]	Piping length [ft]	Heat capacity [Btu/°F]	Volume [oz]	Upstream volume [oz]	Branch cumulative volume [oz]	Cumulative volume [oz]	
1		Copper M	3/8		0	0	0	0	0	New Delete

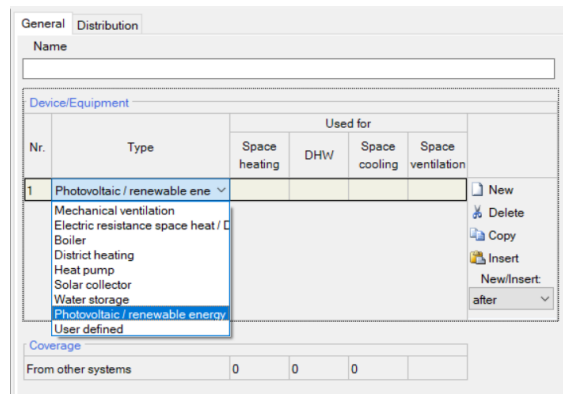


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7. Systems > General > Photovoltaics:

Enter any renewable energy, on-site or offsite, as this device type.

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

Location

Off-site

Utilization

Directly owned off-site renewable

Directly owned off-site renewable

Community renewable energy

Virtual power purchase agreement

Renewable energy certificates (RECs)

Photovoltaic / renewable energy [kWh/yr]

Onsite utilization [-] 1

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



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Green-E Certified Renewable Energy Certificates (RECs)	Varies	0.2
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