



DesignPH – 08: Analyze & Export

Webinar. October 20, 2020



bldgtyp



Ed May | Partner, Building-Type, LLC
(architect, passive house consultant, teacher)



NYPH 2020 Technical Workshops



DesignPH | SketchUp | PHPP | Ventilation

DesignPH 2.0 A Powerful Tool	NYPH Members	General Admission	PHI CEUs
MODULE 01 BASIC FOR EVERYONE			
01_Workflow: Modeling, Required Tools	Free	\$ 15	1.0 EC
02_Solar: Location, Orientation, Axes, Shadow	Free	\$ 15	1.0 EC
MODULE 02 ADVANCED FOR PASSIVE HOUSE DESIGNERS			
03_Face Assignments: Exposure Type, U-Values, Creating Assemblies	Free	\$ 15	TBD
04_Face Assignments: Below Grade, Shading Context, Non-Thermal Faces	Free	\$ 15	TBD
05_Assignments: Thermal Bridge, TFA Surface	Free	\$ 15	TBD
06_Window: Modeling, Components, Mullions and Reveals	Free	\$ 15	TBD
07_Window: Editing and Adjusting, Curtain Walls, Shading	Free	\$ 15	TBD
MODULE 03 PROFESSIONAL FOR ENERGY MODELERS			
08_Analysis: Run Simulations, Results Tracker	TBD	\$ 15	TBD
09_Shading: Analyzing Window Radiation Effects and Regular Shading	TBD	\$ 15	TBD
10_PHPP: Exporting dDP File, Importing PHPP Files, Finish off the model in PHPP	TBD	\$ 15	TBD

May 19th

June 2nd

June 16th

June 30th

July 21st

Sept 22nd

Oct 6th

Oct 20th

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Agenda [1 hour]



- DesignPH Review
- Analyze!
- Export to PHPP

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DesignPH Review

Requirements



What you'll need:

- A copy of the **DesignPH 2.0** plugin
- **Sketchup 3-D** modeling software
- A copy of the **PHPP v.8 or 9** (and Excel)

<https://foursevenfive.com/designph-2-0/>

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 [DESIGNPH 2.0](#)

PHI

DesignPH 2.0

from \$360.00

Available only in Metric at this time. IP version in development.

Type:

Quantity:

ADD TO CART



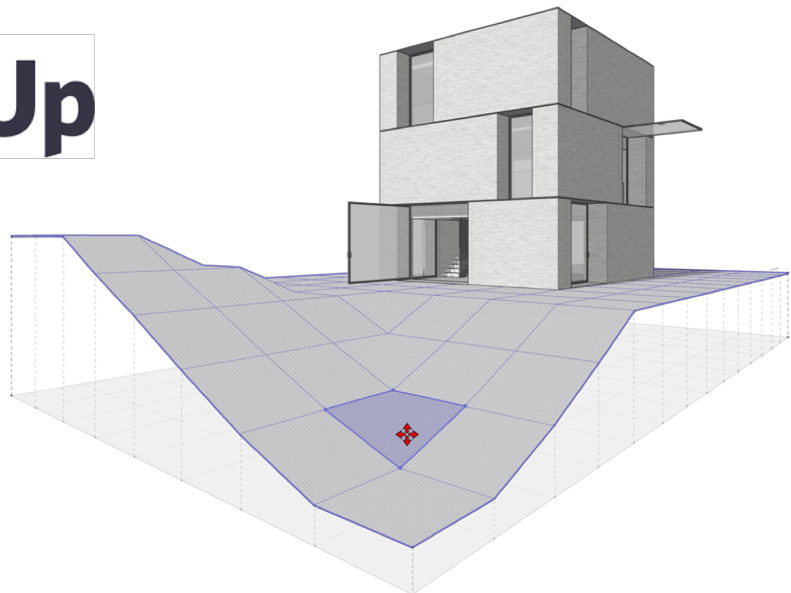

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Sketchup

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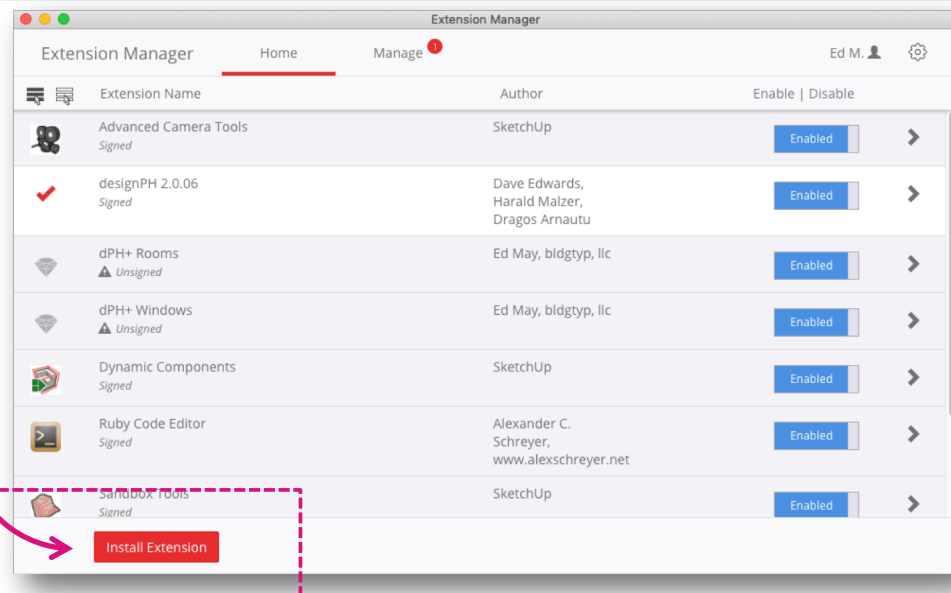
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Sketchup Extensions Manager

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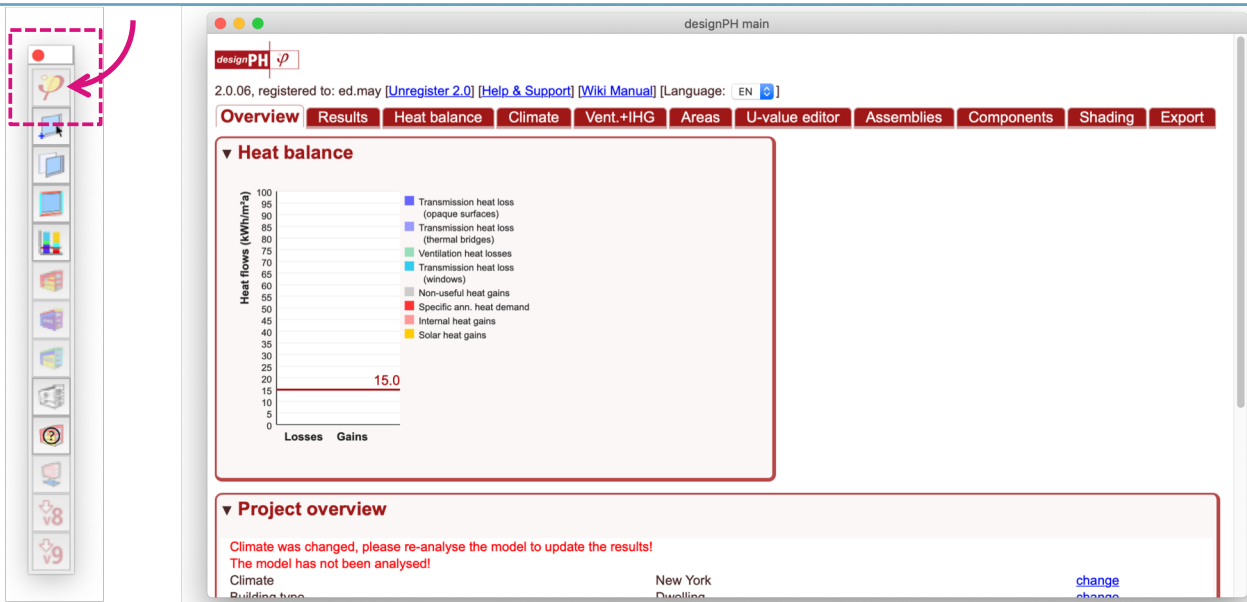
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Start DesignPH Plugin [Each time you run Sketchup]

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DesignPH Workflow

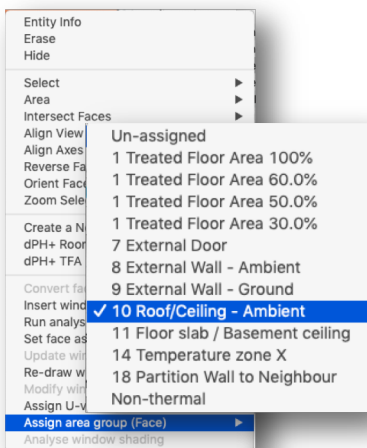
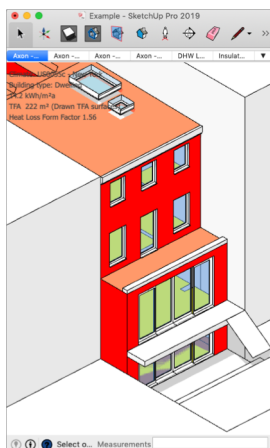


1) Model Geometry

2) Tag Model Geometry w/ Data

3) Analyze

4) Export



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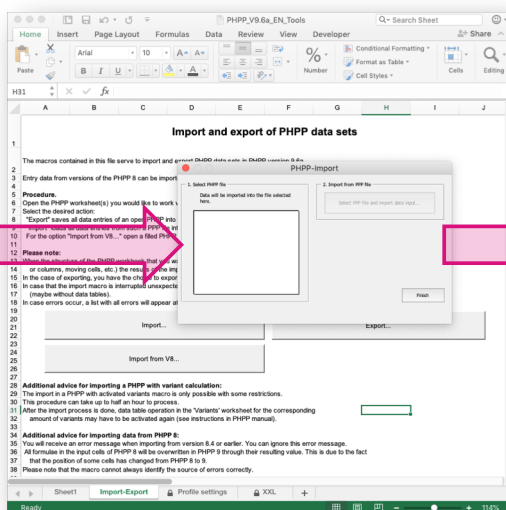
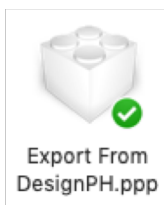
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DesignPH Workflow



5) Import

6) Complete the PHPP



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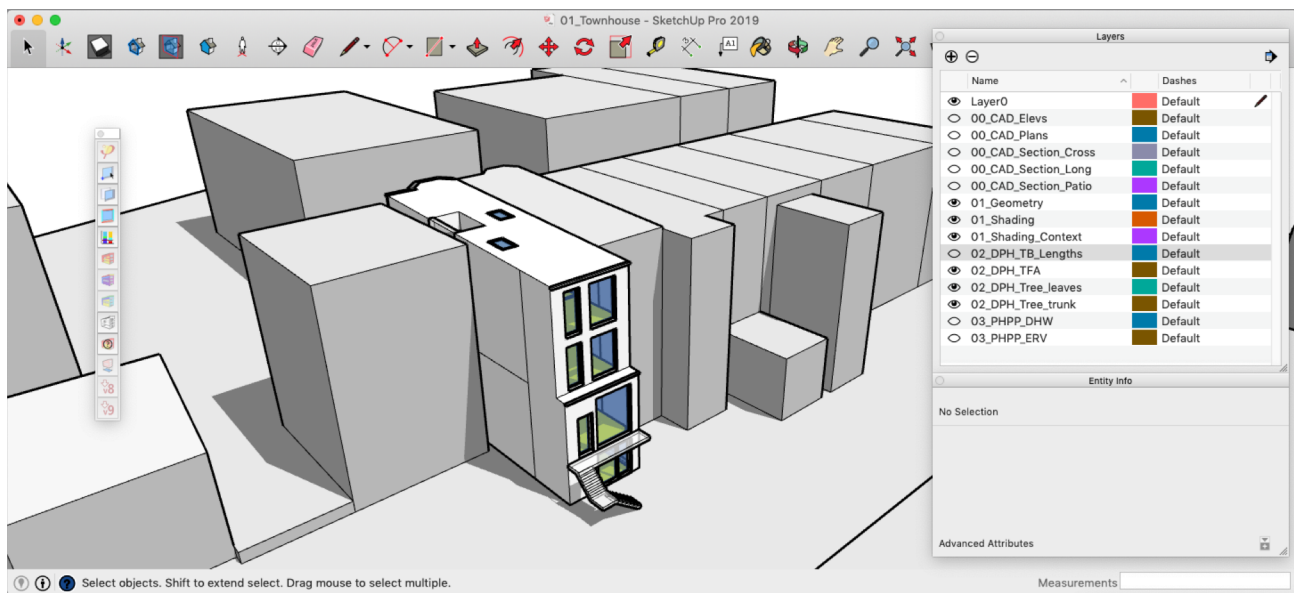
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Analyze

We're finally ready to Analyze!



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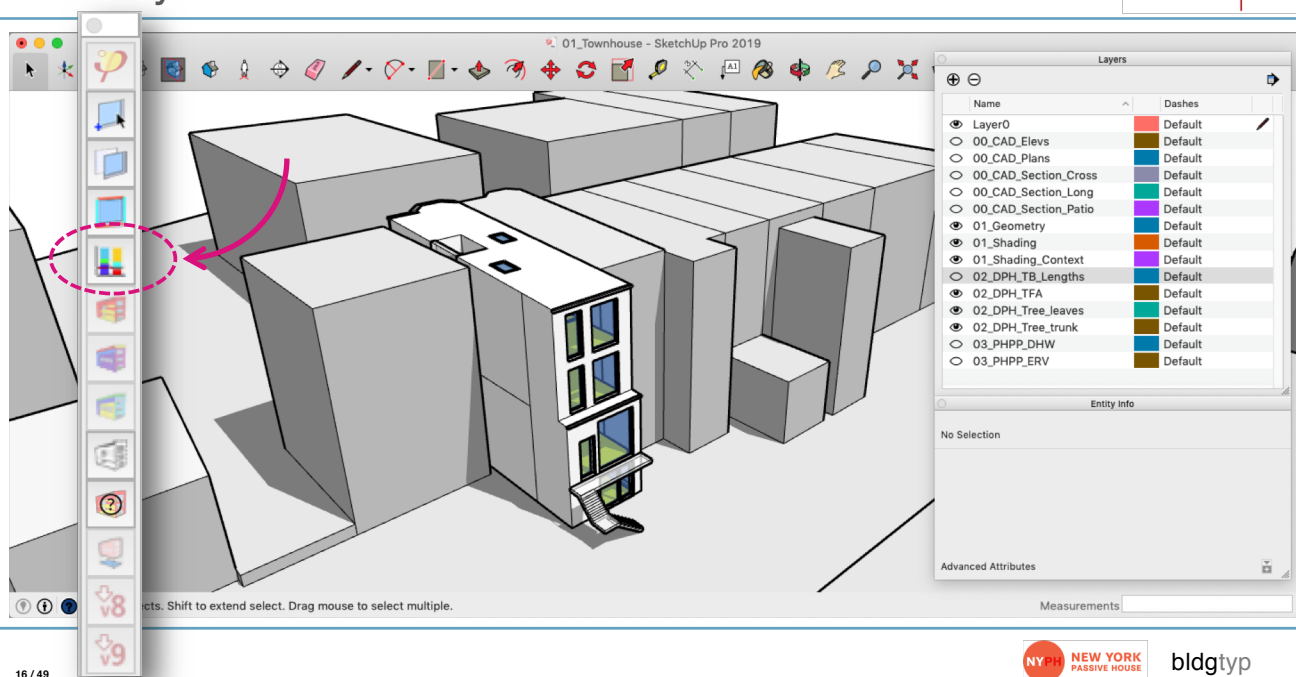


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- ☒ Surfaces Modeled
- ☒ U-Values Assigned
- ☒ Windows Modeled
- ☒ Components Assigned
- ☒ Shading Modeled
- ☒ Model North Oriented Correctly
- ☒ TFA Modeled, Factors Assigned

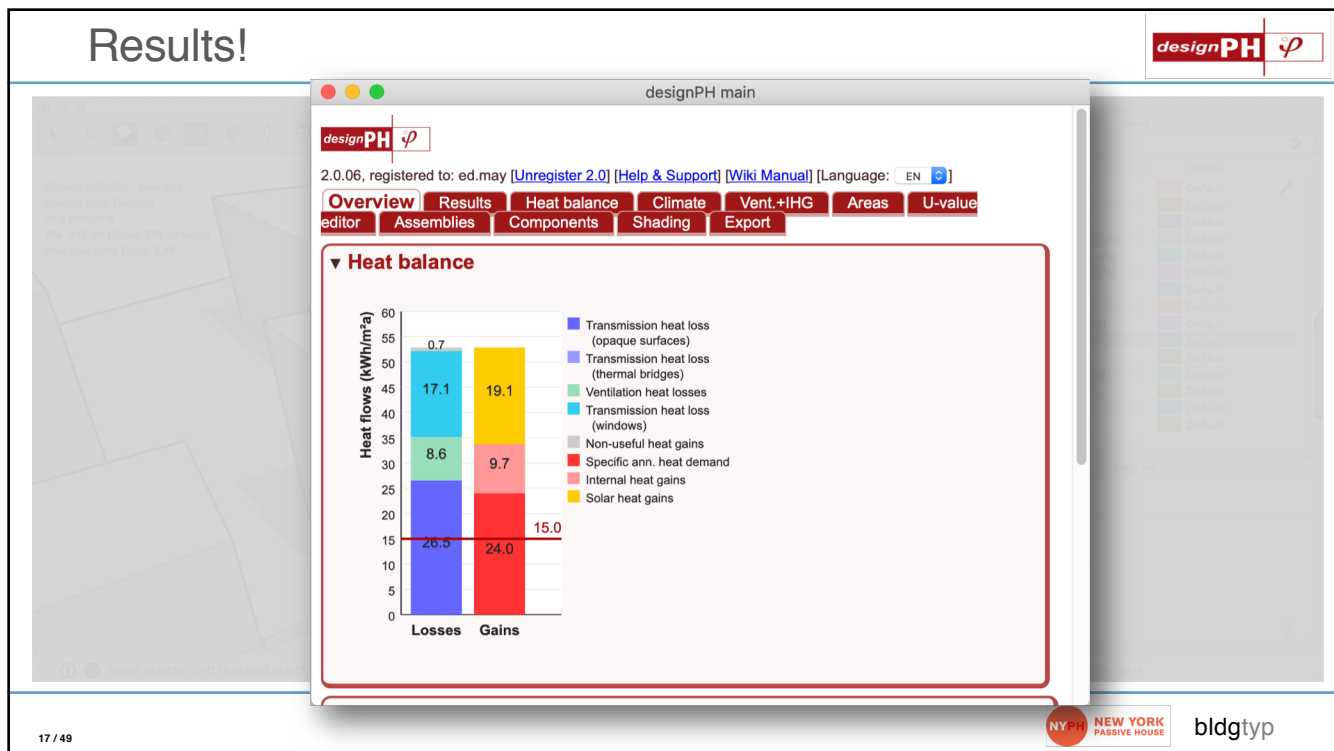
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Analyze!



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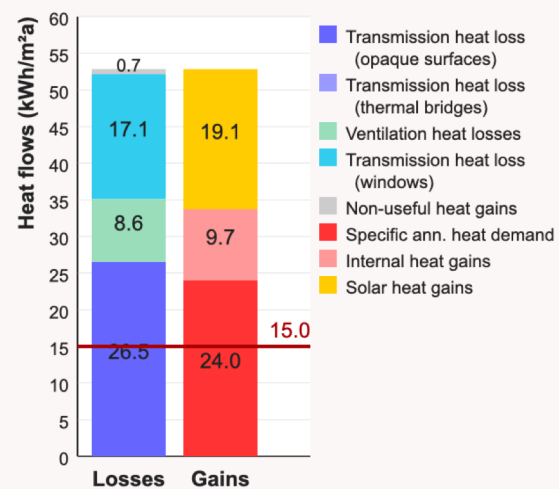
Results!



Things to keep in mind.....

- This is for winter ONLY, no cooling (yet)
- We have not (yet) set the climate
- We have not (yet) set any ventilation information
- We have not (yet) set the shading resolution

▼ Heat balance



1) Set the Climate



designPH main

2.0.06, registered to: ed.may [Unregister 2.0] [Help & Support] [Wiki Manual] [Language: EN]

Overview Results Heat balance **Climate** Vent.+IHG Areas U-value
editor Assemblies Components Shading Export

▼ Selected climate (monthly data)

Country **US** Location ✓ - Select climate -

Climate data ID	Country	City	Altitude (m)	Climate zone	H_T	G_t	North	East	South	West	Horizontal
US0001a	US	Birmingham, Alabama	40.00	4	175.00	64.00	115.00	303.00	572.00	289.00	453.00
US0002a	US	Anchorage, Alaska	0	6	21.90	24.70	24.00	20.00	13.80	8.70	3.10
US0003a	US	Kodiak, Alaska	0	6	51.00	49.00	42.00	32.00	24.00	17.00	14.00
US0004a	US	Little Rock, Arkansas	0	6	103.00	104.00	98.00	76.00	66.00	41.00	40.00
US0005a	US	Phoenix, Arizona	0	6	85.00	92.00	101.00	109.00	121.00	98.00	89.00
US0006a	US	Tucson, Arizona	0	6	100.00	102.00	98.00	80.00	63.00	46.00	32.00
US0007a	US	Bakersfield, California	0	6	192.00	193.00	168.00	131.00	99.00	64.00	50.00
US0008a	US	Fresno, California	0	6	14.70	17.60	17.30	13.90	7.70	1.90	-3.30
US0009b	US	Los Angeles, California	0	6	10.10	12.10	13.50	9.00	1.50	-3.80	-12.00
US0010b	US	Sacramento, California	0	6							
US0011a	US	San Diego, California	0	6							
US0012a	US	San Francisco, California	0	6							
US0013a	US	San Jose, California	0	6							
US0014a	US	Colorado Springs, Colorado	0	6							
US0015a	US	Denver, Colorado	0	6							
US0016a	US	Hartford, Connecticut	0	6							
US0017a	US	New Haven, Connecticut	0	6							
US0018a	US	Washington, D.C.	0	6							

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1) Set the Climate: Custom ?



Übersicht - Komponentendaten: x +

Not Secure klimadaten.passiv.de/?lang=en_EN

Map Satellite

There are two ways of calculating the climate data:

- Select the desired position on the map (JavaScript required)
- Enter the latitude and longitude manually

The corresponding climate data for the selected position can be downloaded by clicking on "Calculate climate" and copied into the PHPP.

Search: 68 34th Street, Brooklyn NY Go!

Latitude (north positive) 40.6571726

Longitude (east positive) -74.00653199999999

☒ Comma as a decimal separator
☐ Point as a decimal separator

☒ csv file separated by a semicolon
☐ csv file separated by a tab stop

PHPP 8 and later Calculate

Impressum | Haftungsausschluss | Datenschutz

No functionality to import / set custom climates in DesignPH yet. If you are using custom climates from PHI, you'll have to enter it in the PHPP AFTER you export in the later steps. For now, set your model to the closest location you can find in the list.

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2) Ventilation

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Overview Results Heat balance Climate **Vent.+IHG** Areas U-value
 editor Assemblies Components Shading Export

Ventilation & Internal Heat Gains - inputs

▼ Ventilation heat losses

Select ventilation type 1 - Balanced PH ventilation with HR

Select ventilation unit 97ud - [75.0%] Default: PH minimum HR

vent_sys_ID	vent_type_ID	Room height, (m)	Net air volume for pressure test, V _{n50} (m³)	Air change rate at pressure test, n50 (1/h)	Wind protection coeff., e	Wind protection coeff., f
97ud	1	2.5	740.1	1.0	0.07	15.0
Room height, (m)	Treated Floor Area (m²)	Ventilation volume, V _v (m³)	Net air volume for pressure test, V _{n50} (m³)	Air change rate at pressure test, n50 (1/h)	Wind protection coeff., e	Wind protection coeff., f
2.50	243.33	608.33	740.10	1.00	0.07	15.00
Design air flow rate (m³/h) V_dot_av Average air change rate (1/h) vent_n_v_ex Heat recovery efficiency eta_HR_eff						
237.25		182.68	0.30	0	0.75	0.74

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2) Ventilation: Custom HRV?

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Overview Results Heat balance Climate **Vent.+IHG** Areas U-value
 editor Assemblies Components Shading Export

Ventilation & Internal Heat Gains - inputs

▼ Ventilation

Select ventilation type -Select option-
 01ud - [70.0%] Example: poor HR
 02ud - [85.0%] Example: good HR

Select ventilation unit 97ud - [75.0%] Default: PH minimum HR

vent_sys_ID	vent_type_ID	Room height, (m)	Treated Floor Area (m²)	Ventilation volume, V _v (m³)	Net air volume for pressure test, V _{n50} (m³)	Air change rate at pressure test, n50 (1/h)	Wind protection coeff., e	Wind protection coeff., f
97ud	1	2.5	243.33	608.33	740.10	1.00	0.07	15.00
Design air flow rate (m³/h) V_dot_av Average air change rate (1/h) vent_n_v_ex Heat recovery efficiency eta_HR_eff								
237.25		182.68	0.30	0	0.75	0.74		

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2) Ventilation: Volume

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Overview Results Heat balance Climate **Vent.+IHG** Areas U-value
 editor Assemblies Components Shading Export

Ventilation & Internal Heat Gains - inputs

▼ Ventilation heat losses

Select ventilation type 1 - Balanced PH ventilation with HR

Select ventilation unit 97ud - [75.0%] Default: PH minimum HR

vent_sys_ID	vent_type_ID	Room height, (m)	Net air volume for pressure test, V_{n50} (m ³)	Air change rate at pressure test, n50 (1/h)	Wind protection coeff., e	Wind protection coeff., f
97ud	1	2.5	740.1	1.0	0.07	15.0
Room height, (m)	Treated Floor Area (m ²)	Ventilation volume, V_v (m ³)	Net air volume for pressure test, V_{n50} (m ³)	Air change rate at pressure test, n50 (1/h)	Wind protection coeff., e	Wind protection coeff., f
2.50	243.33	608.33	740.10	1.00	0.07	15.00
Design air flow rate (m ³ /h) V_{dot_av} Average air change rate (1/h) vent_n_v_ex Heat recovery efficiency eta_HR_eff						
237.25		182.68	0.30	0	0.75	0.74

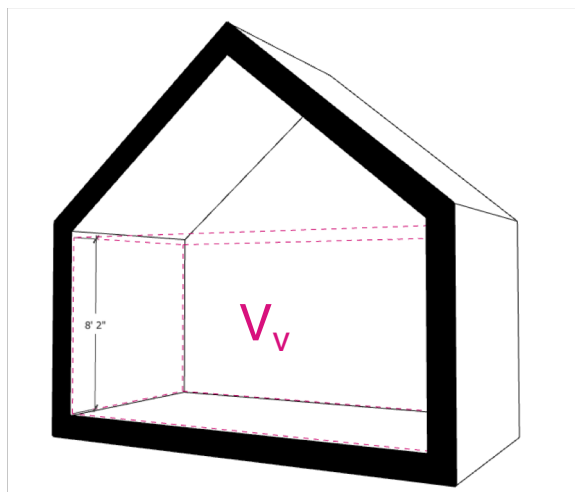
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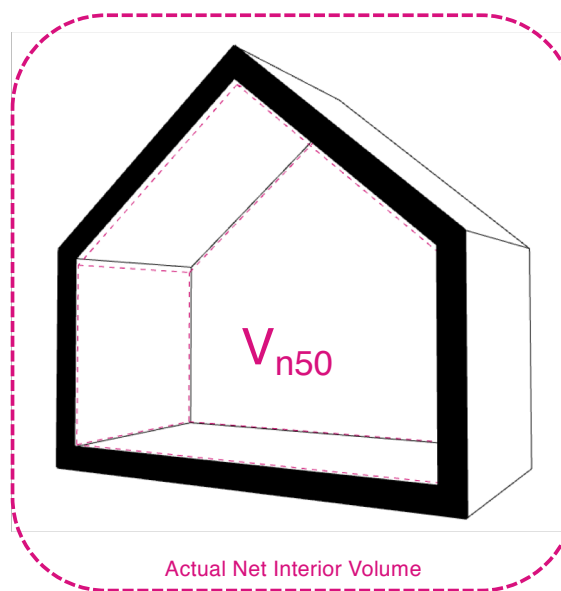
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2 Different Reference Volumes

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'Breathable Air' Zone (TFA x 8.2')



Actual Net Interior Volume

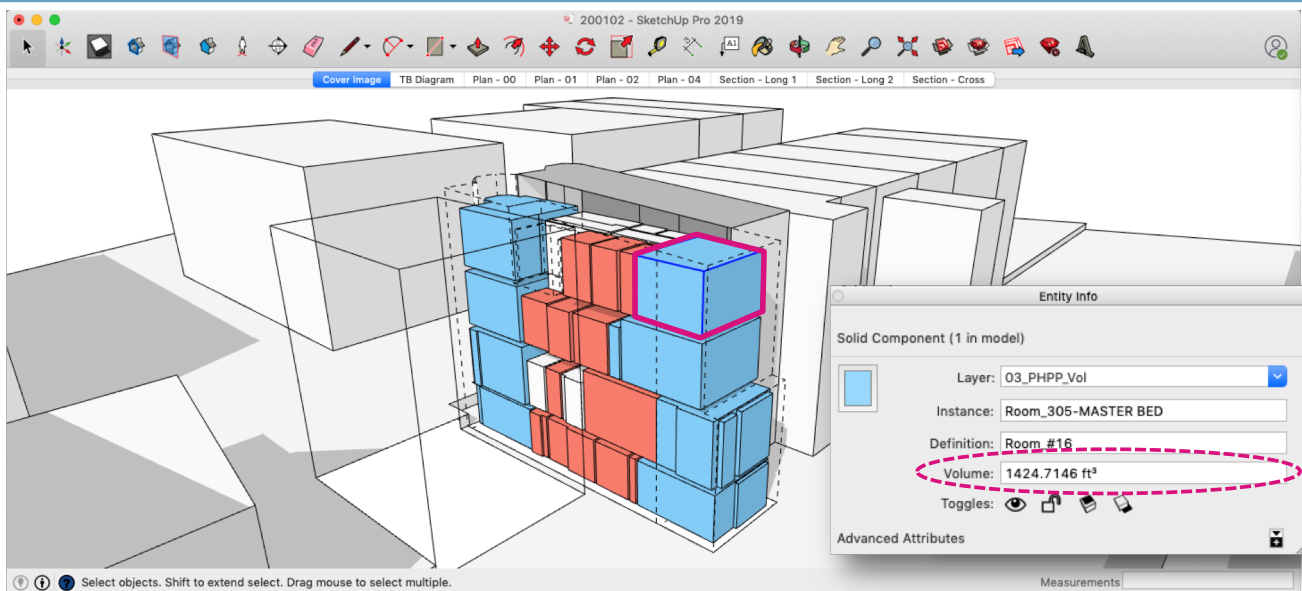
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2) Ventilation: Volume

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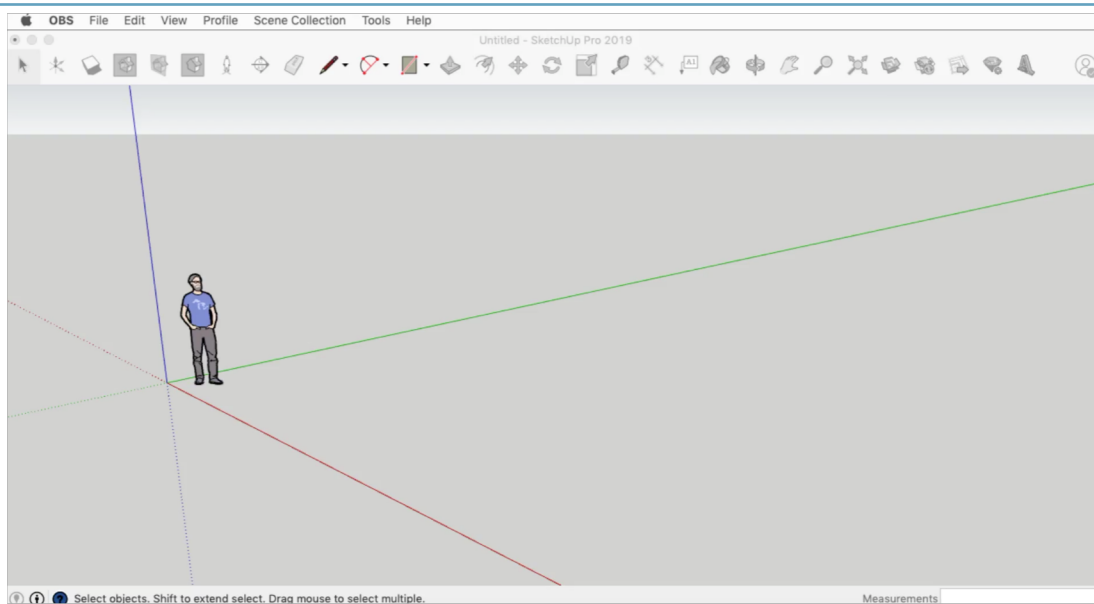
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Room-Data Plugin [Not Part of DesignPH]

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Room-Data Plugin [Not Part of DesignPH]

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RoomData.csv Open with Microsoft Excel

SKP-PID	Zone	Floor	Room Num	Amount	Room Name	Allocation to Vent	Area (m2)	Vv Reference Height (m)	V-Sup (m3/h)	V-Eta
351594	0-COMMERCIAL	0-CELLAR	000	1	0-COMMERCIAL_FL-0-CELLAR_000-STAIR	1	0.0	0.0	0.0	0.0
351596	0-COMMERCIAL	0-CELLAR	000	1	0-COMMERCIAL_FL-0-CELLAR_000-FIRE PASSAGE	1	16.4	2.5	0.0	0.0
351590	0-COMMERCIAL	0-CELLAR	000	1	0-COMMERCIAL_FL-0-CELLAR_000-STORAGE	1	4.08	2.5	0.0	0.0

Amount a	Room name	Allocation to ventilation unit (No.)	Area A m²	Clear height h m	Room vol. A x h m³	V _{SUP} m³/h	Volume flow per room V _{ETA} m³/h	V _{TRANS} m³/h	Air chr per room 1/h
0	0-COMMERCIAL_FL-0-CELLAR_000-STAIR	1	0.0	0.00		0	0	0	
0	0-COMMERCIAL_FL-0-CELLAR_000-FIRE PASSAGE	1	16.4	2.50		0	0	0	
0	0-COMMERCIAL_FL-0-CELLAR_000-STORAGE	1	4.1	2.50		0	0	0	
0	0-COMMERCIAL_FL-0-CELLAR_000-FIRE STAIR	1	0.0	0.00		0	0	0	
0	0-COMMERCIAL_FL-0-CELLAR_C03-MECH ROOM / STOR	1	14.6	2.50		0	127	0	
0	0-COMMERCIAL_FL-0-CELLAR_C04-ELEV. MACHINE ROOM	1	0.0	0.00		0	255	0	
0	0-COMMERCIAL_FL-0-CELLAR_C07-WC	1	2.8	2.50		0	127	0	
0	0-COMMERCIAL_FL-0-CELLAR_C08-COMMUNITY FACILITY	1	67.8	2.50		85	0	0	
0	0-COMMERCIAL_FL-0-CELLAR_C10-MECH CLOSET	1	2.6	2.50		0	0	0	
0	0-COMMERCIAL_FL-01_100-VESTIBULE	1	0.0	0.00		0	0	0	
0	0-COMMERCIAL_FL-01_101-CELLAR ACCESS	1	0.0	0.00		0	0	0	
0	0-COMMERCIAL_FL-01_106-WC	1	0.0	0.00		0	127	0	
0	0-COMMERCIAL_FL-01_107-COMMUNITY FACILITY	1	91.6	2.50		136	0	0	
0	1-RES-COMMON_FL-0-CELLAR_000-ELEV	2	0.0	0.00		0	0	0	
4	1-RES-COMMON_FL-0-CELLAR_000-HALLWAY	2	4.6	2.50	12	0	0	0	

Components: Windows Shading Ventilation **Additional Vent** Annual heating Heating Heating Load SummVent Cooling Cooling units Cooling load

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2) Ventilation: Airchange Rate @ 50Pa

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Overview Results Heat balance Climate **Vent.+IHG** Areas U-value
 editor Assemblies Components Shading Export

Ventilation & Internal Heat Gains - inputs

▼ Ventilation heat losses

Select ventilation type: 1 - Balanced PH ventilation with HR

Select ventilation unit: 97ud - [75.0%] Default: PH minimum HR

vent_sys_ID	vent_type_ID	Room height, (m)	Net air volume for pressure test, V _{n50} (m³)	Air change rate at pressure test, n50 (1/h)	Wind protection coeff., e	Wind protection coeff., f
97ud	1	2.5	740.1	1.0	0.07	15.0
Room height, (m)	Treated Floor Area (m²)	Ventilation volume, V _v (m³)	Net air volume for pressure test, V _{n50} (m³)	Air change rate at pressure test, n50 (1/h)	Wind protection coeff., e	Wind protection coeff., f
2.50	243.33	608.33	740.10	1.00	0.07	15.00
Design air flow rate (m³/h) V_dot_av Average air change rate (1/h) vent_n_v_ex Heat recovery efficiency eta_HR_eff						
237.25		182.68	0.30	0	0.75	0.74

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3) Shading Resolution

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Overview Results Heat balance Climate Vent.+IHG Areas U-value
editor Assemblies Components **Shading** Export

Shading - hourly results and analysis settings

▼ Analyse single window

Select a single window to analyse using the button below or 'Analyse window shading' from the context menu. Hourly results can be inspected in the tables and charts below.

NOTE: The settings below will be used for all windows the next time you run analysis. The energy balance will not be updated until you run analysis.

Analyse selected window Select: shading mask resolution V-lo-res (20) Select: number of analysis points Centre point

Seasonal results - No data - Analyse a window to see the results

The settings here will be applied to ALL windows during analysis run. Be careful with using very high resolutions as it can lead to very long calculation times.

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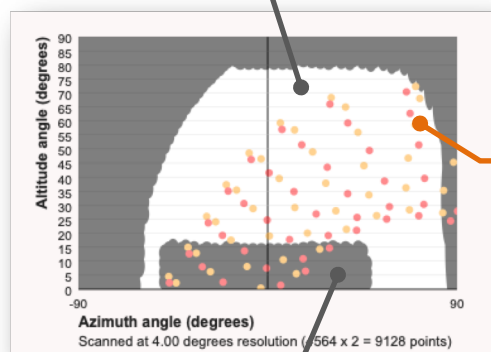
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DesignPH 2.0 Shading Masks

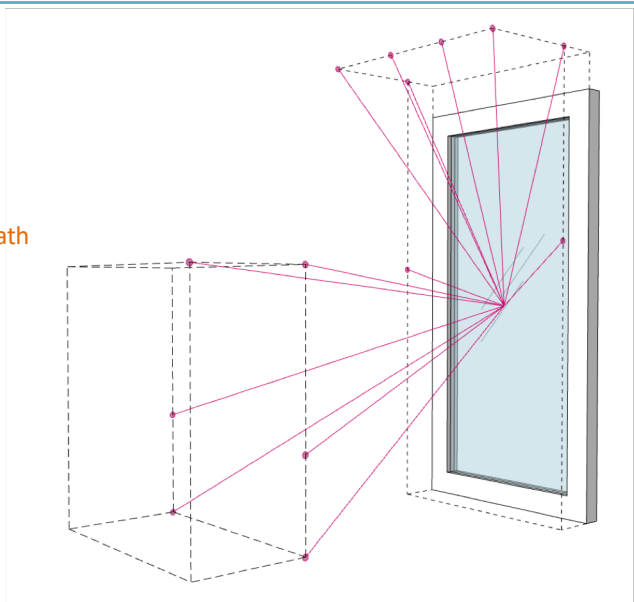
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Un-Shaded Areas



Shaded Areas

Sun Path



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▼ Analyse single window

Select a single window to analyse using the button below or 'Analyse window shading' from the context menu. Hourly results can be inspected in the tables and charts below.

NOTE: The settings below will be used for all windows the next time you run analysis. The energy balance will not be updated until you run analysis.

Analyse selected window

Season	Unshaded radiation	Shaded radiation	Shading factor
winter	158.4	116.4	0.77
summer	180.1	123.3	0.52

Select: shading mask resolution

-Select option-

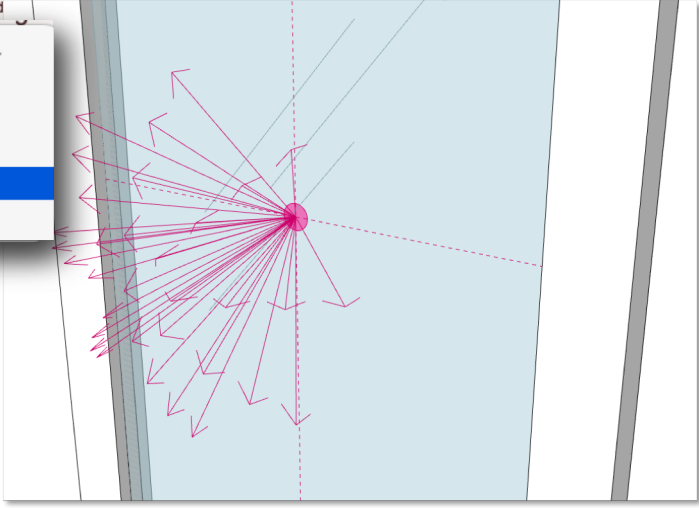
VV-lo-res (15)

V-lo-res (20)

Lo-res (30)

✓ **Med-res (45)**

Hi-res (90)

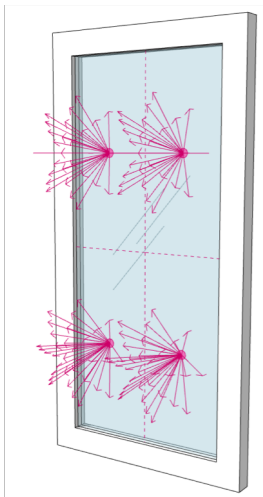
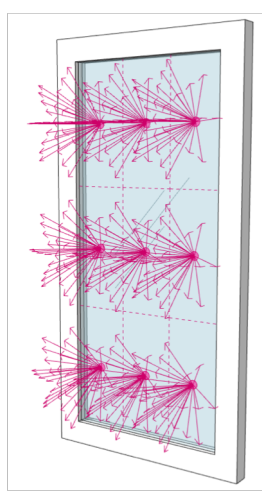


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Number of Analysis Points

▼ Analyse single window

Select a single window to analyse using the button below or 'Analyse window shading' from the context menu. Hourly results can be inspected in the tables and charts below.

NOTE: The settings below will be used for all windows the next time you run analysis. The energy balance will not be updated until you run analysis.

Analyse selected window

Season	Unshaded radiation	Shaded radiation	Shading factor	np_reduc
winter	158.4	116.4	0.77	
summer	180.1	123.3	0.52	

Select: shading mask resolution

Hi-res (90)

Select: number of analysis points

-Select option-

✓ **Centre point**

4 points

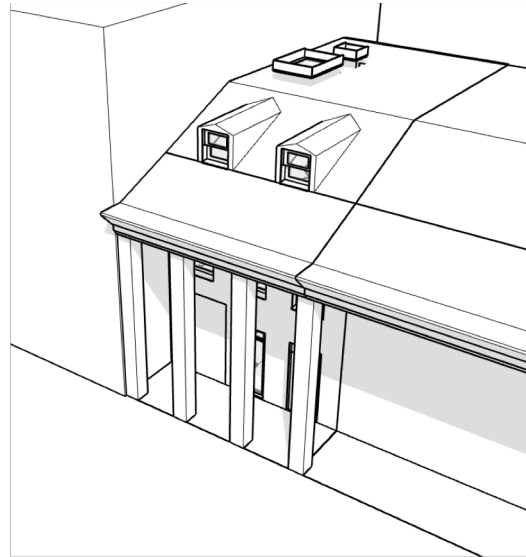
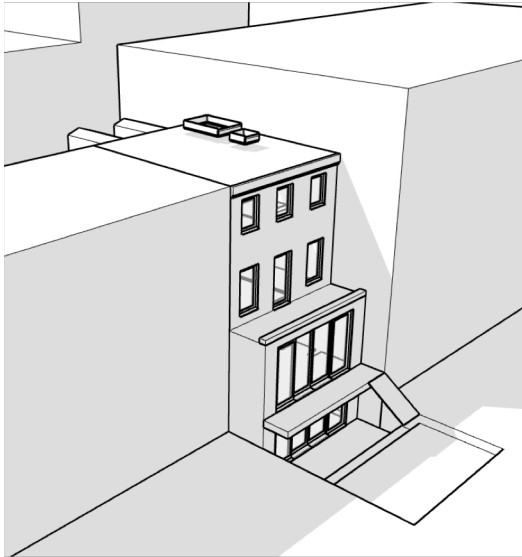
9 points

16 points

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Example I Brooklyn NY Rowhouse [37 windows]



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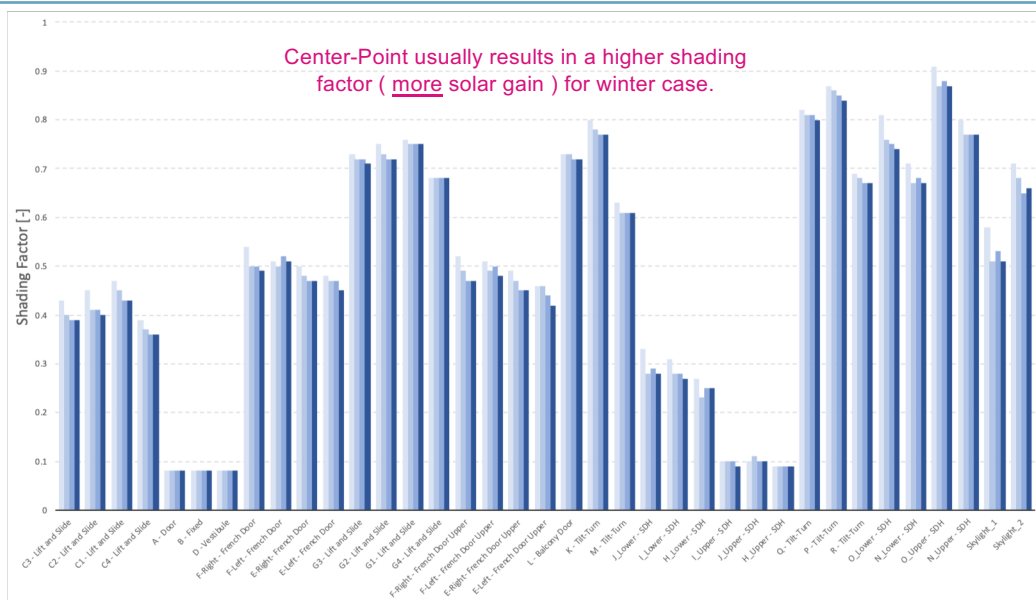


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Example I Brooklyn NY Rowhouse | WINTER



Center
4 point
9 point
16 point



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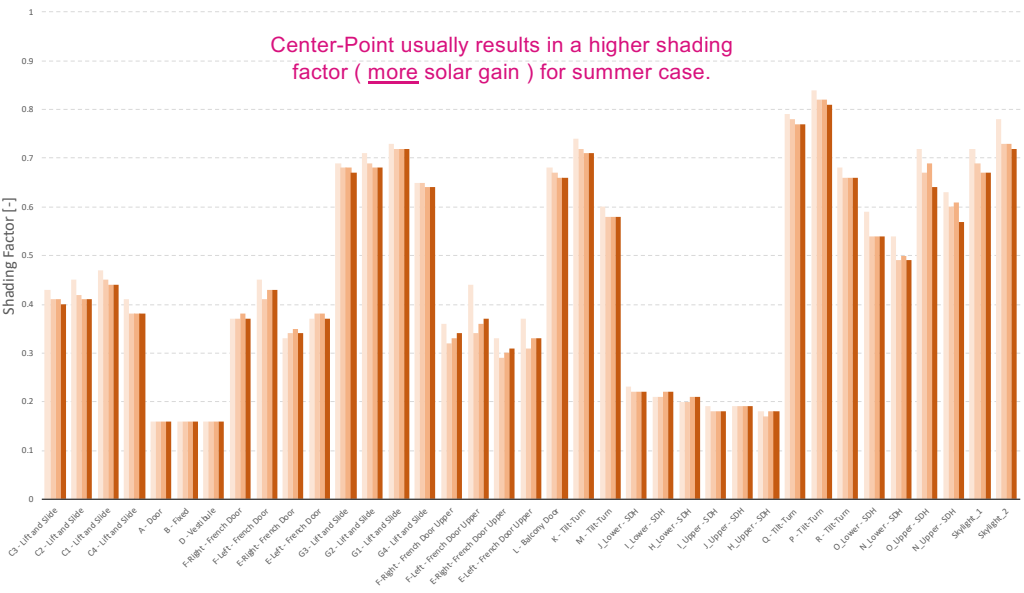


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Example | Brooklyn NY Rowhouse | Summer



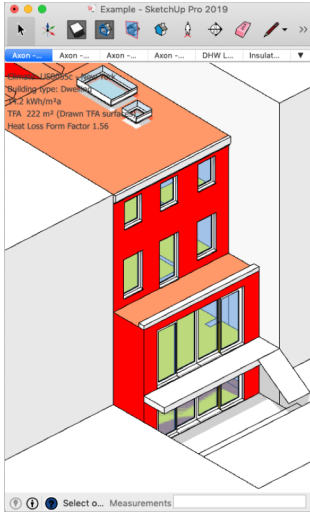
Center
4 point
9 point
16 point



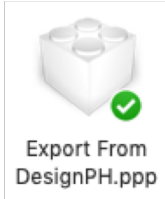
Export to PHPP



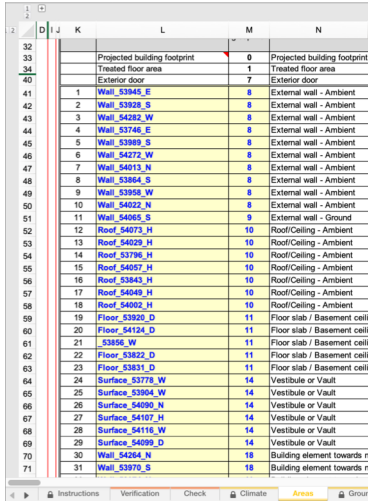
DesignPH



.PPP File



New PHPP



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4 Export Levels

Overview
Results
Heat balance
Climate
Vent.+IHG
Areas
U-value

editor
Assemblies
Components
Shading
Export

Selective export options

► **Standard export**

 Tables to be exported to PHPP:
ALL

► **Geometry + components**

 Tables to be exported to PHPP:
Treated Floor Area, Opaque surfaces, Thermal bridges, Windows, Shading, Assemblies (user-calculated U-values), Glazing (user-defined), Frames (user-defined), Assemblies (user-defined), Projected building footprint

► **Geometry only**

 Tables to be exported to PHPP:
Treated Floor Area, Opaque surfaces, Thermal bridges, Windows, Shading, Projected building footprint

► **User-defined components only**

 Tables to be exported to PHPP:
Assemblies (user-calculated U-values), Glazing (user-defined), Frames (user-defined), Assemblies (user-defined)

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IP PHPP ? [<https://designph.org/FAQ>]



FAQ

This article contains **Frequently Asked Questions (FAQ)** concerning the time prior to purchasing **designPH**.

- **Is there an IP (US Imperial Units) version of designPH?**

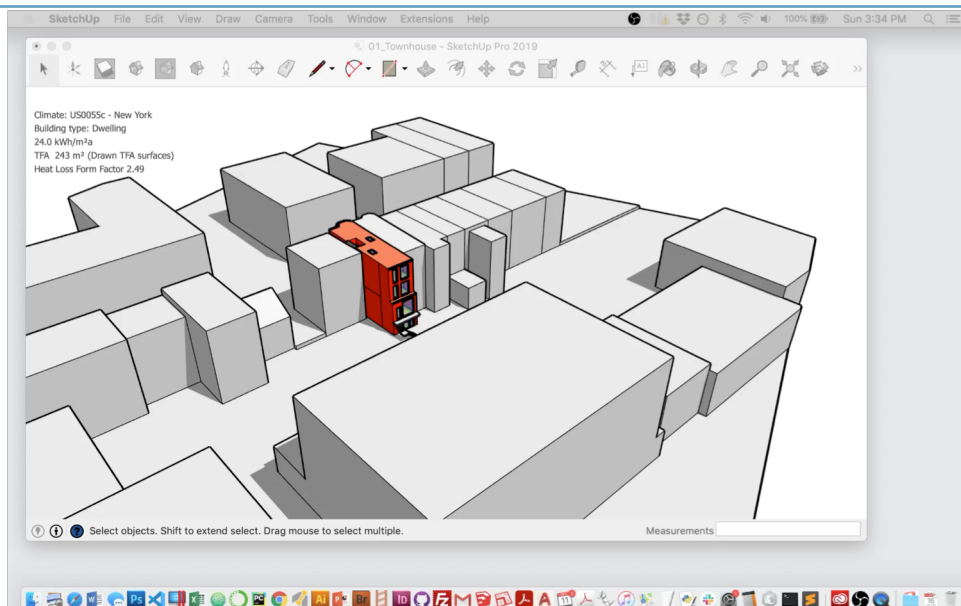
Users of the PHPP-IP version can enable the designPH-IP export modes by activating designPH using their PHPP-IP registration code received from the reseller. A minimum of designPH v1.1.50 is required for compatibility with PHPP_IPv9. The calculation and data-entry in designPH itself remains in metric units.

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Step 1) Save Out your .PPP File



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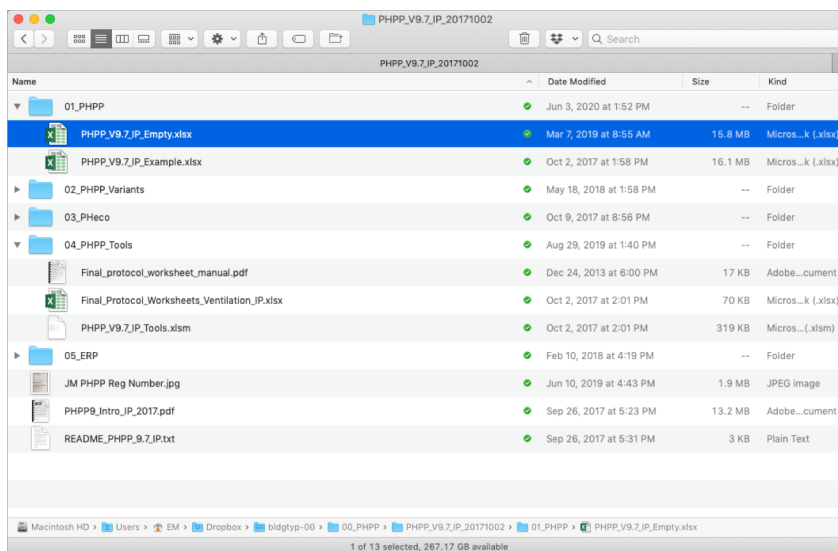


bldgtyp

Step 2) Open a NEW blank PHPP Copy



Make a NEW Copy

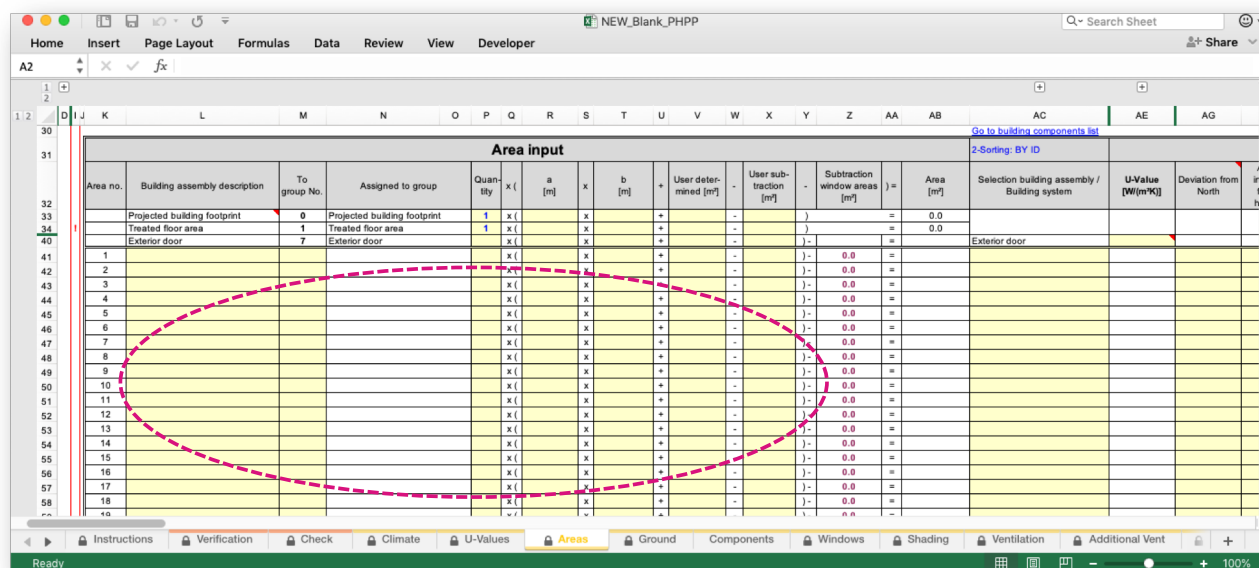


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Step 3) Open the New (Blank) PHPP Copy

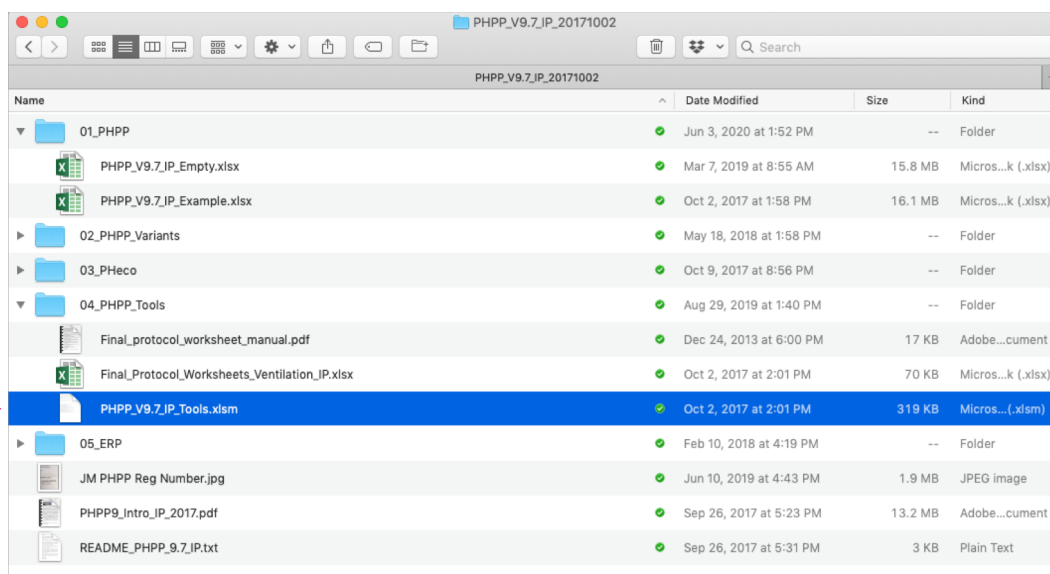


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Step 4) Open the PHPP_V9.7_IP_Tools.xlsm

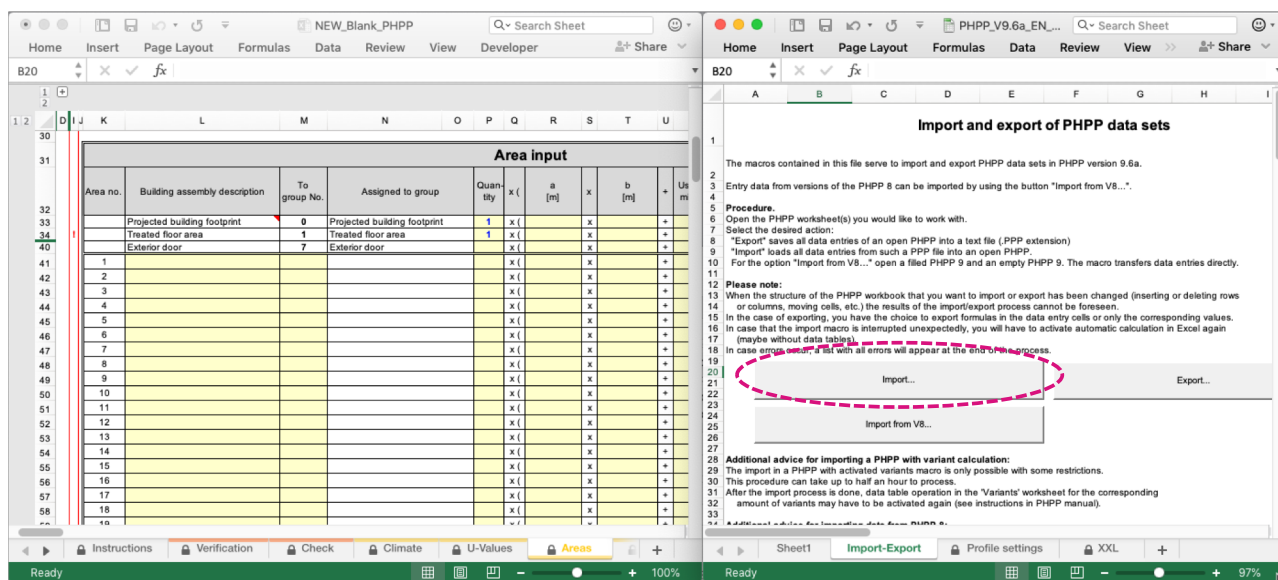


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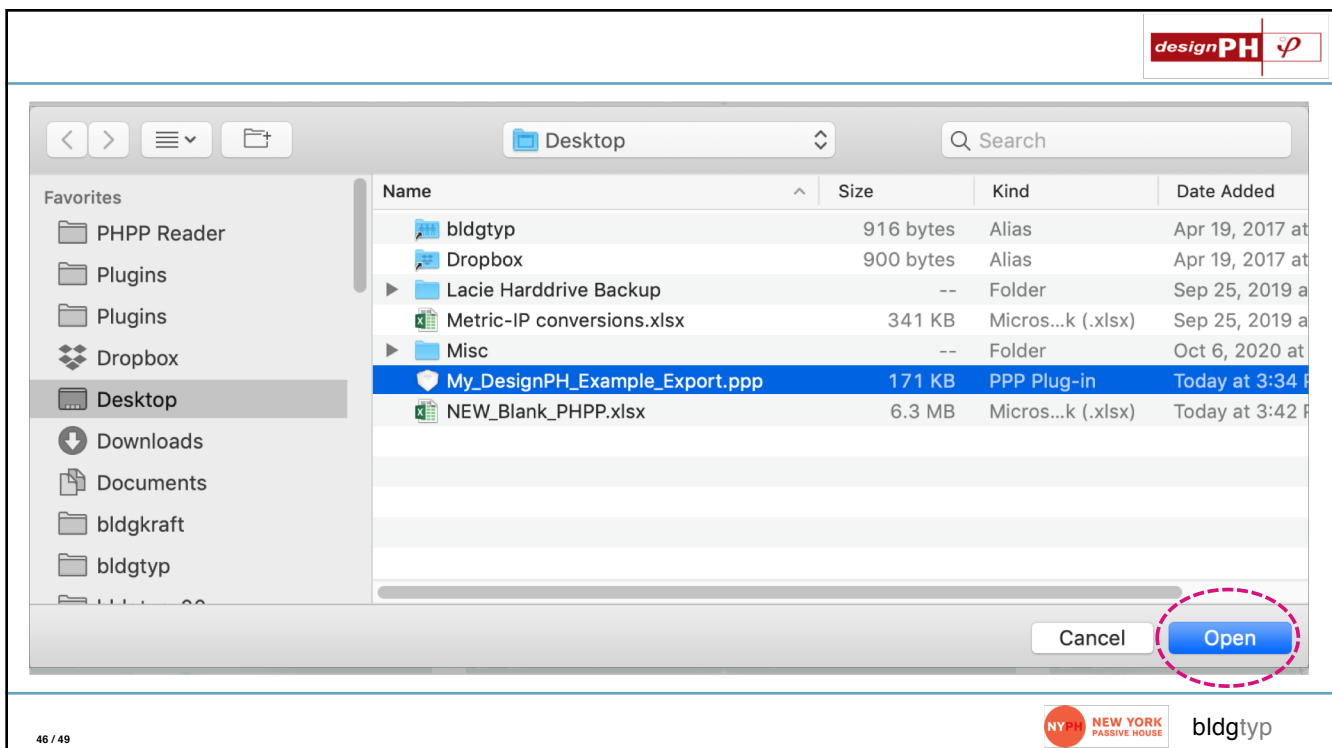
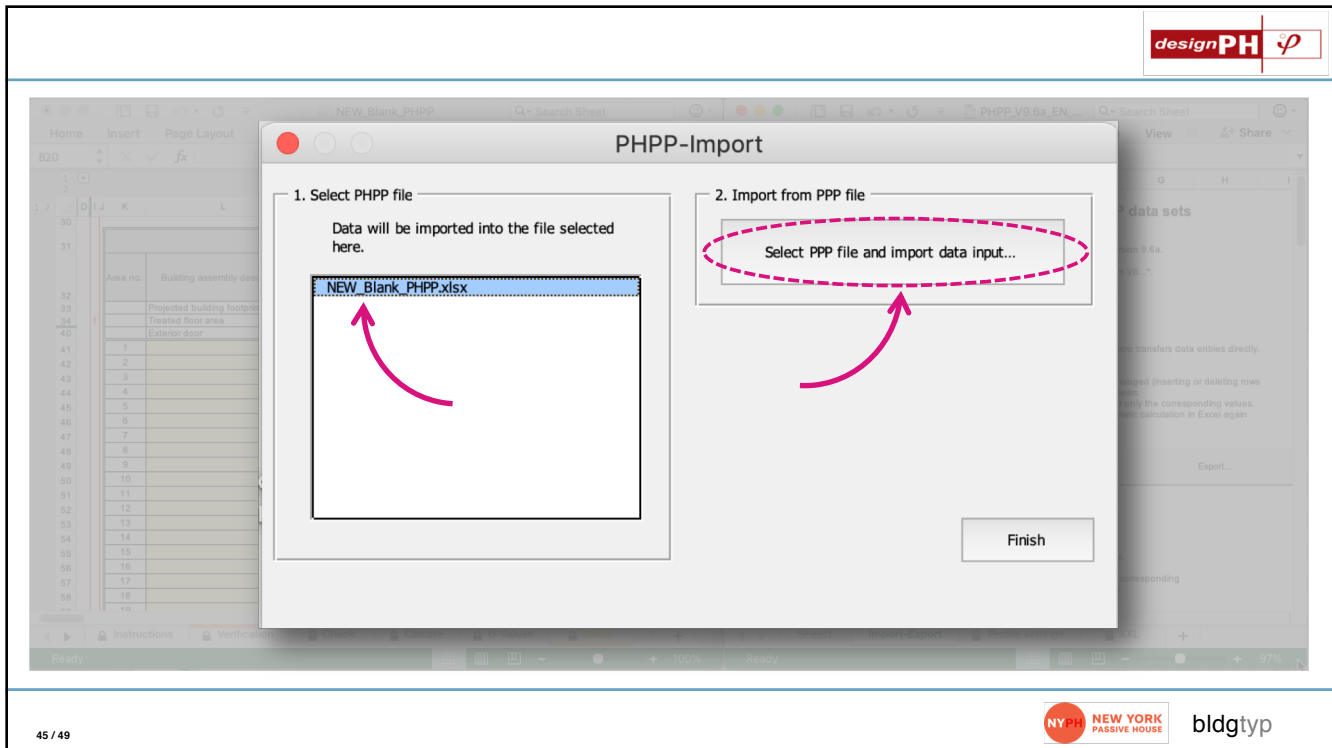
Blank PHPP AND Tools.xlsm Open at the Same Time



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All our DesignPH Data is now in our PHPP



NEW_Blank_PHPP

Search Sheet

Home Insert Page Layout Formulas Data Review View Developer

A2

Go to building components list

2-Sorting: BY ID

Area no.	Building assembly description	To group No.	Assigned to group	Quantity	x (	a [m]	x	b [m]	+	User determined [m²]	-	User subtraction [m²]	-	Subtraction window areas [m²]	=	Area [m²]	Selection building assembly / Building system	U-Value [W/(m²K)]
	Projected building footprint	0	Projected building footprint	1	x (		x		+	0.00	-		-		=	0.0		
	Treated floor area	1	Treated floor area	1	x (		x		+	243.33	-		-		=	243.3		
	Exterior door	7	Exterior door	1	x (		x		+		-		-		=		Exterior door	
1	Floor_Extg	11	Floor slab / Basement ceiling	1	x (		x		+	73.25	-		-		=	73.2	07ud-Cellar Floor (EPB)	
2	Floor_Extension	11	Floor slab / Basement ceiling	1	x (	5.00	x	3.21	+		-		-		=	16.1	07ud-Cellar Floor (EPB)	
3	Wall_003_W	8	External wall - Ambient	1	x (	14.09	x	6.48	+		-		-		=	91.4	01ud-Wall Type A	
4	Wall_004_S	8	External wall - Ambient	1	x (	6.62	x	5.00	+		-		-		=	17.3	03ud-Wall Type C	
5	Wall_005_E	8	External wall - Ambient	1	x (		x		+	37.11	-		-		=	37.1	03ud-Wall Type C	
6	Wall_006_W	8	External wall - Ambient	1	x (		x		+	37.11	-		-		=	37.1	03ud-Wall Type C	
7	Roof_Rear-Ext	10	Roof/Ceiling - Ambient	1	x (	5.00	x	0.69	+		-		-		=	3.5	06ud-Roof	
8	Wall_008_N	8	External wall - Ambient	1	x (	13.76	x	1.98	+		-		-		=	17.9	01ud-Wall Type A	
9	Wall_009_W	8	External wall - Ambient	1	x (		x		+	5.25	-		-		=	5.2	01ud-Wall Type A	
10	Wall_010_N	8	External wall - Ambient	1	x (	13.78	x	0.14	+		-		-		=	1.9	01ud-Wall Type A	
11	Wall_011_E	18	Building element towards neighbor	1	x (		x		+	193.61	-		-		=	193.6	04ud-Wall Type D	
12	Wall_012_N	8	External wall - Ambient	1	x (		x		+	14.79	-		-		=	10.6	01ud-Wall Type A	
13	Wall_013_N	8	External wall - Ambient	1	x (	13.82	x	1.37	+		-		-		=	12.1	01ud-Wall Type A	
14	Wall_014_E	8	External wall - Ambient	1	x (		x		+	14.79	-		-		=	10.6	01ud-Wall Type A	
15	Roof_Roofdeck	10	Roof/Ceiling - Ambient	1	x (		x		+	6.50	-		-		=	6.5	06ud-Roof	
16	Wall_016_S	8	External wall - Ambient	1	x (	6.18	x	5.00	+		-		-		=	17.2	03ud-Wall Type C	
17	Wall_017_W	8	External wall - Ambient	1	x (		x		+	86.59	-		-		=	86.6	03ud-Wall Type B	
18	Wall_018_S	8	External wall - Ambient	1	x (	2.57	x	1.69	+		-		-		=	0.3	03ud-Wall Type C	
19	Wall_019_W	8	External wall - Ambient	1	x (	3.14	x	2.57	+		-		-		=	0.5	03ud-Wall Type C	
20	Wall_020_N	8	External wall - Ambient	1	x (	2.57	x	1.69	+		-		-		=	0.3	03ud-Wall Type C	

Ready

Areas Ground Components Windows Shading Ventilation Additional Vent Annual heating Heating Heating Load Summiv...

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Finish filling in the PHPP



- Custom Climates
- Some surface settings (Absorptivity, Emissivity, Shading)
- Any Ground elements / ground contact
- Any mechanical heating, cooling, dehumidification
- Summer Comfort (operable windows)
- Detailed room-by-room ventilation
- Custom ventilation units, duct insulation, duct lengths, etc...
- Anything to do with the Variants worksheet
- Anything PER related
- Anything 'Non-Res' (use, lighting, IHG)
- Electricity worksheets
- DHW, Solar, PV or Hydronic systems

Thank You!

Ed@NAPHNetwork.org