

Residential System Sizing Calculation

Summary

Project Title:
Coppock Residence

, FL

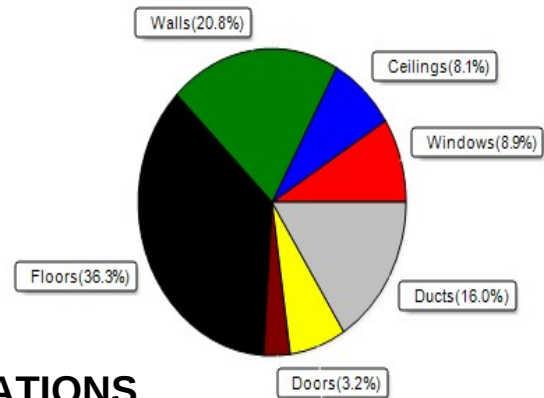
8/31/2023

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(100 ft.) Temp Range(M)			
Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(51gr.)			
Winter design temperature(TMY3 99%)	30 F	Summer design temperature(TMY3 99%)	94 F
Winter setpoint	70 F	Summer setpoint	75 F
Winter temperature difference	40 F	Summer temperature difference	19 F
Total heating load calculation	29762 Btuh	Total cooling load calculation	24627 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	121.0 36000	Sensible (SHR = 0.85)	145.5 30600
Heat Pump + Auxiliary(0.0kW)	121.0 36000	Latent	150.5 5400
		Total (Electric Heat Pump)	146.2 36000

WINTER CALCULATIONS

Winter Heating Load (for 1893 sqft)

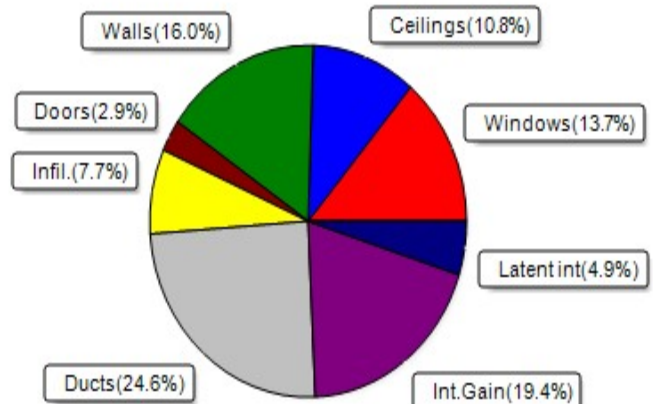
Load component	Load
Window total 254 sqft	2640 Btuh
Wall total 1744 sqft	6192 Btuh
Door total 60 sqft	960 Btuh
Ceiling total 1893 sqft	2411 Btuh
Floor total 1893 sqft	10809 Btuh
Infiltration 46 cfm	2002 Btuh
Duct loss	4748 Btuh
Subtotal	29762 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	29762 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1893 sqft)

Load component	Load
Window total 254 sqft	3379 Btuh
Wall total 1744 sqft	3948 Btuh
Door total 60 sqft	720 Btuh
Ceiling total 1893 sqft	2653 Btuh
Floor total	0 Btuh
Infiltration 34 cfm	713 Btuh
Internal gain	4780 Btuh
Duct gain	4846 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	21038 Btuh
Latent gain(ducts)	1206 Btuh
Latent gain(infiltration)	1183 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	3589 Btuh
TOTAL HEAT GAIN	24627 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

8-31-23

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Coppock Residence

, FL

8/31/2023

Reference City: Gainesville, FL (Defaults)
Humidity difference: 51gr.

Temperature Difference: 19.0F(TMY3 99%)
Summer Setpoint: 75 °F (Required Manual J default)

Component Loads for Whole House

Window	Type*					Overhang		Window Area(sqft)			HTM		Load			
	Panes	SHGC	U	InSh	IS Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded				
1	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	20.0	0.0	20.0	9	9	183	Btuh		
2	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	9.0	0.0	9.0	9	9	82	Btuh		
3	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	30.0	0.0	30.0	9	9	274	Btuh		
4	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	12.5	0.0	12.5	9	9	114	Btuh		
5	2 NFRC	0.20, 0.26	No	No	E	1.5ft	2.3ft	20.0	0.0	20.0	9	24	484	Btuh		
6	2 NFRC	0.20, 0.26	No	No	E	1.5ft	2.3ft	30.0	0.0	30.0	9	24	727	Btuh		
7	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	30.0	30.0	0.0	9	11	274	Btuh		
8	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	15.0	15.0	0.0	9	11	137	Btuh		
9	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	13.3	12.4	1.0	9	11	123	Btuh		
10	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	30.0	30.0	0.0	9	11	274	Btuh		
11	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	9.0	9.0	0.0	9	11	82	Btuh		
12	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	15.0	15.0	0.0	9	11	137	Btuh		
13	2 NFRC	0.20, 0.26	No	No	W	1.5ft	2.3ft	20.0	0.0	20.0	9	24	484	Btuh		
	Window Total							254 (sqft)					3379 Btuh			
Walls	Type	U-Value					R-Value			Area(sqft)			HTM		Load	
							Cav/Sheath									
1	Frame - Wood - Ext					0.09		13.0/0.0		118.0			2.3		267 Btuh	
2	Frame - Wood - Ext					0.09		13.0/0.0		69.0			2.3		156 Btuh	
3	Frame - Wood - Ext					0.09		13.0/0.0		184.0			2.3		416 Btuh	
4	Frame - Wood - Ext					0.09		13.0/0.0		69.0			2.3		156 Btuh	
5	Frame - Wood - Ext					0.09		13.0/0.0		63.0			2.3		143 Btuh	
6	Frame - Wood - Ext					0.09		13.0/0.0		27.0			2.3		61 Btuh	
7	Frame - Wood - Ext					0.09		13.0/0.0		82.0			2.3		186 Btuh	
8	Frame - Wood - Ext					0.09		13.0/0.0		371.5			2.3		841 Btuh	
9	Frame - Wood - Ext					0.09		13.0/0.0		82.5			2.3		187 Btuh	
10	Frame - Wood - Ext					0.09		13.0/0.0		69.0			2.3		156 Btuh	
11	Frame - Wood - Ext					0.09		13.0/0.0		102.0			2.3		231 Btuh	
12	Frame - Wood - Ext					0.09		13.0/0.0		36.0			2.3		81 Btuh	
13	Frame - Wood - Ext					0.09		13.0/0.0		182.7			2.3		413 Btuh	
14	Frame - Wood - Ext					0.09		13.0/0.0		61.0			2.3		138 Btuh	
15	Frame - Wood - Ext					0.09		13.0/0.0		39.0			2.3		88 Btuh	
16	Frame - Wood - Ext					0.09		13.0/0.0		188.5			2.3		427 Btuh	
	Wall Total							1744 (sqft)					3948 Btuh			
Doors	Type	U-Value					R-Value			Area (sqft)			HTM		Load	
1	Insulated - Exterior									20.0			12.0		240 Btuh	
2	Insulated - Exterior									20.0			12.0		240 Btuh	
3	Insulated - Exterior									20.0			12.0		240 Btuh	
	Door Total							60 (sqft)					720 Btuh			
Ceilings	Type/Color/Surface	U-Value					R-Value			Area(sqft)			HTM		Load	
1	Vented Attic/Med/Shingle					0.032		30.0/0.0		1893.0			1.40		2653 Btuh	
	Ceiling Total							1893 (sqft)					2653 Btuh			
Floors	Type	U-Value					R-Value			Size			HTM		Load	
1	Slab On Grade							0.0		1893 (ft-perimeter)			0.0		0 Btuh	
	Floor Total							1893.0 (sqft)					0 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Coppock Residence

, FL

8/31/2023

	Envelope Subtotal:					10699 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.12	17037	1	34.2	713 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		6	X 230	+	3400	4780 Btuh
	Sensible Envelope Load:					16192 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.299)					4846 Btuh
	Sensible Load All Zones					21038 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Coppock Residence

, FL

8/31/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	16192 Btuh
	Sensible Duct Load	4846 Btuh
	Total Sensible Zone Loads	21038 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	21038 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1183 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1206 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3589 Btuh
	TOTAL GAIN	24627 Btuh

EQUIPMENT

1. Central Unit	#	36000 Btuh
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*Key: Window types (Panels - Number and type of panes of glass)
(SHGC - Shading coefficient of glass as SHGC numerical value)
(U - Window U-Factor)
(InSh - Interior shading device: none(No), Blinds(B), Draperies(D) or Roller Shades(R))
- For Blinds: Assume medium color, half closed
For Draperies: Assume medium weave, half closed
For Roller shades: Assume translucent, half closed
(IS - Insect screen: none(N), Full(F) or Half(½))
(Ornt - compass orientation)



Version 8

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Project Title:
Coppock Residence
Building Type: User

, FL

8/31/2023

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 99%)
Winter Setpoint: 70 °F (Required Manual J default)

Component Loads for Whole House								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.20	Vinyl	0.26	N	20.0		10.4	208 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	9.0		10.4	94 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	30.0		10.4	312 Btuh
4	2, NFRC 0.20	Vinyl	0.26	N	12.5		10.4	130 Btuh
5	2, NFRC 0.20	Vinyl	0.26	E	20.0		10.4	208 Btuh
6	2, NFRC 0.20	Vinyl	0.26	E	30.0		10.4	312 Btuh
7	2, NFRC 0.20	Vinyl	0.26	S	30.0		10.4	312 Btuh
8	2, NFRC 0.20	Vinyl	0.26	S	15.0		10.4	156 Btuh
9	2, NFRC 0.20	Vinyl	0.26	S	13.3		10.4	139 Btuh
10	2, NFRC 0.20	Vinyl	0.26	S	30.0		10.4	312 Btuh
11	2, NFRC 0.20	Vinyl	0.26	S	9.0		10.4	94 Btuh
12	2, NFRC 0.20	Vinyl	0.26	S	15.0		10.4	156 Btuh
13	2, NFRC 0.20	Vinyl	0.26	W	20.0		10.4	208 Btuh
Window Total					253.8(sqft)			2640 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	118		3.55	419 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	69		3.55	245 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	184		3.55	653 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	69		3.55	245 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	63		3.55	224 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	27		3.55	96 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	82		3.55	291 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	372		3.55	1319 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	83		3.55	293 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	69		3.55	245 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	102		3.55	362 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	36		3.55	128 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	183		3.55	649 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	61		3.55	217 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	39		3.55	138 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	189		3.55	669 Btuh
Wall Total					1744(sqft)			6192 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
2	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
3	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
Door Total					60(sqft)			960Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/M/Shing		(0.032)	30.0/0.0	1893		1.3	2411 Btuh
Ceiling Total					1893(sqft)			2411Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Coppock Residence
Building Type: User

8/31/2023

Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 229.0 ft(perim.) 1893 sqft	HTM= 47.2	Load 10809 Btuh 10809 Btuh
	Envelope Subtotal:					23013 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.16	Volume(cuft) 17037	Wall Ratio 1.00	CFM= 45.6	2002 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.190)					4748 Btuh
All Zones	Sensible Subtotal All Zones					29762 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss Total Heat Loss	(Ex:0 cfm; Sup:0 cfm)	29762 Btuh 0 Btuh 29762 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	36000 Btuh
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Key: Window types - NFRC (Requires U-Factor and Shading coefficient(SHGC) of glass as numerical values)
or - Glass as 'Clear' or 'Tint' (Uses U-Factor and SHGC defaults)
U - (Window U-Factor)
HTM - (ManualJ Heat Transfer Multiplier)



Version 8