

Residential System Sizing Calculation

Summary

Garcia, Chris & Katie
NW Country Lake Drive
Lake City, FL

Project Title:
231301 Garcia

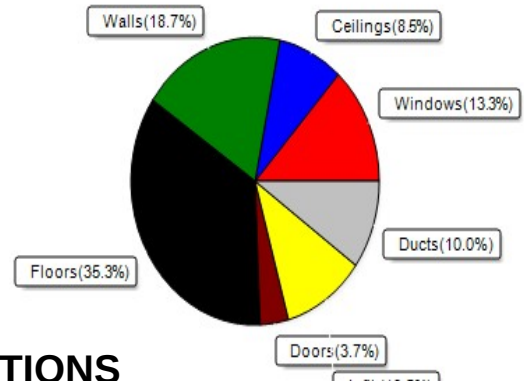
2023-10-17

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	38144 Btuh	Total cooling load calculation	28063 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	110.1 42000	Sensible (SHR = 0.75)	134.6 31500
Heat Pump + Auxiliary(0.0kW)	110.1 42000	Latent	225.6 10500
		Total (Electric Heat Pump)	149.7 42000

WINTER CALCULATIONS

Winter Heating Load (for 2493 sqft)

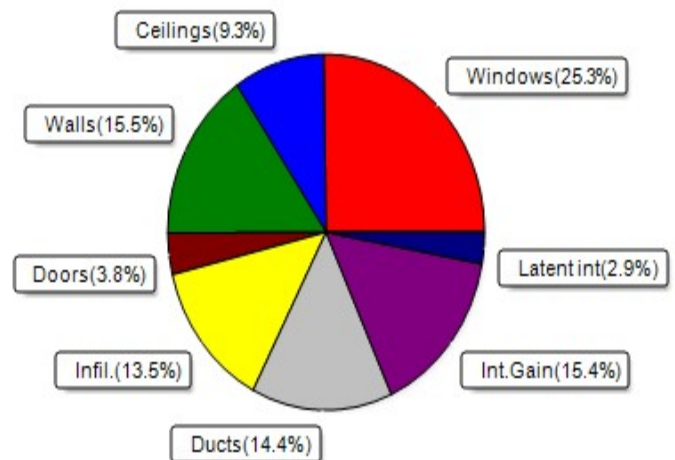
Load component	Load
Window total 424 sqft	5085 Btuh
Wall total 2039 sqft	7138 Btuh
Door total 88 sqft	1408 Btuh
Ceiling total 2700 sqft	3253 Btuh
Floor total 2493 sqft	13452 Btuh
Infiltration 91 cfm	4010 Btuh
Duct loss	3797 Btuh
Subtotal	38144 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	38144 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2493 sqft)

Load component	Load
Window total 424 sqft	7087 Btuh
Wall total 2039 sqft	4362 Btuh
Door total 88 sqft	1056 Btuh
Ceiling total 2700 sqft	2603 Btuh
Floor total	0 Btuh
Infiltration 69 cfm	1429 Btuh
Internal gain	4320 Btuh
Duct gain	2553 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	23410 Btuh
Latent gain(ducts)	1483 Btuh
Latent gain(infiltration)	2371 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	800 Btuh
Total latent gain	4654 Btuh
TOTAL HEAT GAIN	28063 Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2023-10-17

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Garcia, Chris & Katie
NW Country Lake Drive
Lake City, FL

Project Title:
231301 Garcia
Building Type: User

2023-10-17

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	Metal	0.30	N	36.0		12.0	432 Btuh
2	2, NFRC 0.20	Metal	0.30	E	21.3		12.0	256 Btuh
3	2, NFRC 0.20	Metal	0.30	N	72.0		12.0	864 Btuh
4	2, NFRC 0.20	Metal	0.30	W	48.0		12.0	576 Btuh
5	2, NFRC 0.20	Metal	0.30	N	48.0		12.0	576 Btuh
6	2, NFRC 0.20	Metal	0.30	N	36.0		12.0	432 Btuh
7	2, NFRC 0.20	Metal	0.30	N	24.0		12.0	288 Btuh
8	2, NFRC 0.20	Metal	0.30	E	9.3		12.0	112 Btuh
9	2, NFRC 0.20	Metal	0.30	E	20.0		12.0	240 Btuh
10	2, NFRC 0.20	Metal	0.30	E	3.0		12.0	36 Btuh
11	2, NFRC 0.20	Metal	0.30	E	5.1		12.0	61 Btuh
12	2, NFRC 0.20	Metal	0.30	S	4.0		12.0	48 Btuh
13	2, NFRC 0.20	Metal	0.30	S	16.5		12.0	198 Btuh
14	2, NFRC 0.20	Metal	0.30	S	40.0		12.0	480 Btuh
15	2, NFRC 0.20	Metal	0.30	S	16.5		12.0	198 Btuh
16	2, NFRC 0.20	Metal	0.30	W	4.0		12.0	48 Btuh
17	2, NFRC 0.20	Metal	0.30	W	16.0		12.0	192 Btuh
18	2, NFRC 0.20	Metal	0.30	W	4.0		12.0	48 Btuh
	Window Total				423.7(sqft)			5085 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.077)	19.0/0.0	81		3.09	250 Btuh
2	Frame - Wood	- Ext	(0.077)	19.0/0.0	139		3.09	430 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	30		3.55	107 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	17		3.55	60 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	62		3.55	220 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	128		3.55	453 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	90		3.55	320 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	249		3.55	884 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	36		3.55	128 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	81		3.55	288 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	36		3.55	128 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	28		3.55	99 Btuh
13	Frame - Wood	- Adj	(0.089)	13.0/0.0	50		3.55	176 Btuh
14	Frame - Wood	- Adj	(0.089)	13.0/0.0	102		3.55	362 Btuh
15	Frame - Wood	- Adj	(0.089)	13.0/0.0	54		3.55	192 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	64		3.55	225 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	42		3.55	149 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	120		3.55	426 Btuh
19	Frame - Wood	- Ext	(0.089)	13.0/0.0	63		3.55	224 Btuh
20	Frame - Wood	- Ext	(0.089)	13.0/0.0	122		3.55	431 Btuh
21	Frame - Wood	- Ext	(0.089)	13.0/0.0	447		3.55	1587 Btuh
	Wall Total				2039(sqft)			7138 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Garcia, Chris & Katie
NW Country Lake Drive
Lake City, FL

Project Title:
231301 Garcia
Building Type: User

2023-10-17

Doors	Type	Storm Ueff.		Area X	HTM=	Load	
	1	Insulated - Exterior, n	(0.400)	24	16.0	384 Btuh	
	2	Insulated - Exterior, n	(0.400)	16	16.0	256 Btuh	
	3	Insulated - Exterior, n	(0.400)	16	16.0	256 Btuh	
	4	Insulated - Garage, n	(0.400)	24	16.0	384 Btuh	
	5	Insulated - Exterior, n	(0.400)	8	16.0	128 Btuh	
	Door Total			88(sqft)		1408Btuh	
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load	
	1	Knee wall/D/Shing	(0.241)	0.0/22.0	170	1.2	205 Btuh
	2	Flat ceil/D/Shing	(0.241)	0.0/22.0	2153	1.2	2594 Btuh
	3	Sloped ce/D/Shing	(0.241)	0.0/22.0	377	1.2	454 Btuh
	Ceiling Total			2700(sqft)		3253Btuh	
Floors	Type	Ueff.	R-Value	Size X	HTM=	Load	
	1	Slab On Grade	(1.180)	0.0	285.0 ft(perim.)	47.2	13452 Btuh
	Floor Total			2493 sqft		13452 Btuh	
	Envelope Subtotal:					30336 Btuh	
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural	0.23	23434	1.00	91.4	4010 Btuh	
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.111)					3797 Btuh	
All Zones	Sensible Subtotal All Zones					38144 Btuh	

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	38144 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	38144 Btuh

EQUIPMENT

1. Electric Heat Pump	#	42000 Btuh
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Manual J Winter Calculations

Residential Load - Component Details (continued)

Garcia, Chris & Katie
NW Country Lake Drive
Lake City, FL

Project Title:
231301 Garcia
Building Type: User

2023-10-17

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

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Garcia, Chris & Katie
NW Country Lake Drive
Lake City, FL

Project Title:
231301 Garcia

2023-10-17

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, 0.30	No	No	N	1.5ft	1.0ft	36.0	0.0	36.0	10	19	689	Btuh
2	2 NFRC	0.20, 0.30	No	No	E	14.0f	0.0ft	21.3	21.3	0.0	10	20	211	Btuh
3	2 NFRC	0.20, 0.30	No	No	N	15.7f	0.0ft	72.0	0.0	72.0	10	19	1378	Btuh
4	2 NFRC	0.20, 0.30	No	No	W	14.0f	0.0ft	48.0	0.0	48.0	10	19	919	Btuh
5	2 NFRC	0.20, 0.30	No	No	N	15.7f	0.0ft	48.0	0.0	48.0	10	19	919	Btuh
6	2 NFRC	0.20, 0.30	No	No	N	1.5ft	1.0ft	36.0	0.0	36.0	10	19	689	Btuh
7	2 NFRC	0.20, 0.30	No	No	N	1.5ft	1.0ft	24.0	0.0	24.0	10	19	459	Btuh
8	2 NFRC	0.20, 0.30	No	No	E	1.5ft	1.0ft	9.3	3.4	5.9	10	20	152	Btuh
9	2 NFRC	0.20, 0.30	No	No	E	1.5ft	1.0ft	20.0	5.9	14.1	10	20	341	Btuh
10	2 NFRC	0.20, 0.30	No	No	E	1.5ft	1.0ft	3.0	3.0	0.0	10	20	30	Btuh
11	2 NFRC	0.20, 0.30	No	No	E	1.5ft	1.0ft	5.1	3.4	1.6	10	20	67	Btuh
12	2 NFRC	0.20, 0.30	No	No	S	1.5ft	1.0ft	4.0	2.9	1.1	10	20	50	Btuh
13	2 NFRC	0.20, 0.30	No	No	S	11.0f	0.5ft	16.5	16.5	0.0	10	20	163	Btuh
14	2 NFRC	0.20, 0.30	No	No	S	11.0f	0.0ft	40.0	40.0	0.0	10	20	396	Btuh
15	2 NFRC	0.20, 0.30	No	No	S	3.0ft	0.0ft	16.5	16.5	0.0	10	20	163	Btuh
16	2 NFRC	0.20, 0.30	No	No	W	1.5ft	1.0ft	4.0	0.0	4.0	10	19	77	Btuh
17	2 NFRC	0.20, 0.30	No	No	W	1.5ft	1.0ft	16.0	0.0	16.0	10	19	306	Btuh
18	2 NFRC	0.20, 0.30	No	No	W	1.5ft	1.0ft	4.0	0.0	4.0	10	19	77	Btuh
Window Total								424 (sqft)					7087 Btuh	
Walls	Type					U-Value	R-Value	Area(sqft)		HTM		Load		
						Cav/Sheath								
1	Frame - Wood - Ext					0.08	19.0/0.0	81.0		1.7		134 Btuh		
2	Frame - Wood - Ext					0.08	19.0/0.0	139.2		1.7		230 Btuh		
3	Frame - Wood - Ext					0.09	13.0/0.0	30.0		2.3		68 Btuh		
4	Frame - Wood - Ext					0.09	13.0/0.0	17.0		2.3		38 Btuh		
5	Frame - Wood - Ext					0.09	13.0/0.0	62.0		2.3		140 Btuh		
6	Frame - Wood - Ext					0.09	13.0/0.0	127.5		2.3		289 Btuh		
7	Frame - Wood - Ext					0.09	13.0/0.0	90.0		2.3		204 Btuh		
8	Frame - Wood - Ext					0.09	13.0/0.0	248.9		2.3		563 Btuh		
9	Frame - Wood - Ext					0.09	13.0/0.0	36.0		2.3		81 Btuh		
10	Frame - Wood - Ext					0.09	13.0/0.0	81.0		2.3		183 Btuh		
11	Frame - Wood - Ext					0.09	13.0/0.0	36.0		2.3		81 Btuh		
12	Frame - Wood - Ext					0.09	13.0/0.0	27.9		2.3		63 Btuh		
13	Frame - Wood - Adj					0.09	13.0/0.0	49.5		1.7		83 Btuh		
14	Frame - Wood - Adj					0.09	13.0/0.0	102.0		1.7		172 Btuh		
15	Frame - Wood - Adj					0.09	13.0/0.0	54.0		1.7		91 Btuh		
16	Frame - Wood - Ext					0.09	13.0/0.0	63.5		2.3		144 Btuh		
17	Frame - Wood - Ext					0.09	13.0/0.0	42.0		2.3		95 Btuh		
18	Frame - Wood - Ext					0.09	13.0/0.0	120.0		2.3		272 Btuh		
19	Frame - Wood - Ext					0.09	13.0/0.0	63.0		2.3		143 Btuh		
20	Frame - Wood - Ext					0.09	13.0/0.0	121.5		2.3		275 Btuh		
21	Frame - Wood - Ext					0.09	13.0/0.0	447.0		2.3		1012 Btuh		
Wall Total								2039 (sqft)					4362 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Garcia, Chris & Katie
NW Country Lake Drive
Lake City, FL

Project Title:
231301 Garcia

Climate:FL_GAINESVILLE_REGIONAL_A

2023-10-17

Doors	Type			Area (sqft)	HTM	Load
1	Insulated - Exterior			24.0	12.0	288 Btuh
2	Insulated - Exterior			16.0	12.0	192 Btuh
3	Insulated - Exterior			16.0	12.0	192 Btuh
4	Insulated - Garage			24.0	12.0	288 Btuh
5	Insulated - Exterior			8.0	12.0	96 Btuh
	Door Total			88 (sqft)		1056 Btuh
Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Knee wall to attic/DarkShingle	0.241	0.0/22.0	170.0	0.96	164 Btuh
2	Unvented Attic/DarkShingle	0.241	0.0/22.0	2153.0	0.96	2075 Btuh
3	Unvented Attic/DarkShingle	0.241	0.0/22.0	377.0	0.96	363 Btuh
	Ceiling Total			2700 (sqft)		2603 Btuh
Floors	Type		R-Value	Size	HTM	Load
1	Slab On Grade		0.0	2493 (ft-perimeter)	0.0	0 Btuh
	Floor Total			2493.0 (sqft)		0 Btuh
	Envelope Subtotal:					15108 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.18	23434	1	68.6	1429 Btuh
Internal gain		Occupants	Btuh/occupant	Appliance		Load
		4	X 230	+	3400	4320 Btuh
	Sensible Envelope Load:					20857 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.122)					2553 Btuh
	Sensible Load All Zones					23410 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Garcia, Chris & Katie
NW Country Lake Drive
Lake City, FL

Project Title:
231301 Garcia

Climate:FL_GAINESVILLE_REGIONAL_A

2023-10-17

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	20857 Btuh
	Sensible Duct Load	2553 Btuh
	Total Sensible Zone Loads	23410 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	23410 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2371 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1483 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4654 Btuh
	TOTAL GAIN	28063 Btuh

EQUIPMENT

1. Central Unit	#	42000 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