

Residential System Sizing Calculation

Summary

Peter & Anna Lev

Project Title:
Lot 19 Russwood

Lake City, FL 32024

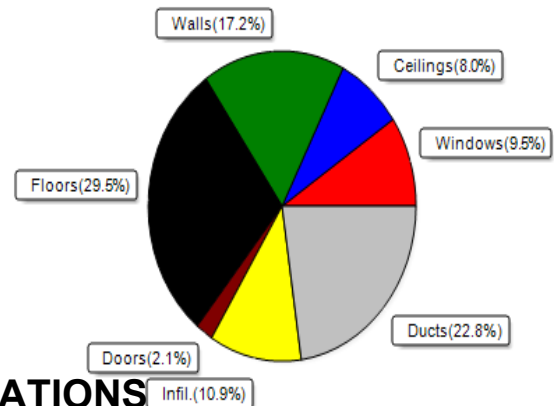
1/15/2024

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)					
Humidity data: Interior RH (50%) Outdoor wet bulb (79F) Humidity difference(54gr.)					
Winter design temperature(MJ8 99%/Cu)33 F			Summer design temperature(MJ8 99%/Cu)99 F		
Winter setpoint 70 F			Summer setpoint 75 F		
Winter temperature difference 37 F			Summer temperature difference 24 F		
Total heating load calculation 32471 Btuh			Total cooling load calculation 32500 Btuh		
Submitted heating capacity % of calc Btuh			Submitted cooling capacity % of calc Btuh		
Total (Electric Heat Pump) 106.4 34553			Sensible (SHR = 0.75) 83.9 22261		
Heat Pump + Auxiliary(0.0kW) 106.4 34553			Latent 124.3 7420		
			Total (Electric Heat Pump) 91.3 29682		

WINTER CALCULATIONS

Winter Heating Load (for 2530 sqft)

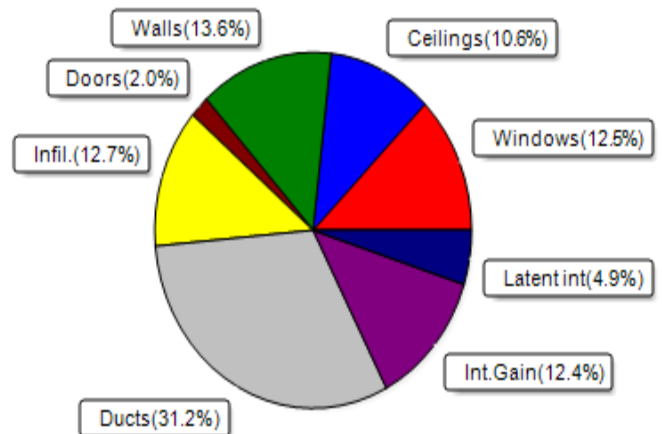
Load component	Load
Window total 231 sqft	3081 Btuh
Wall total 1703 sqft	5592 Btuh
Door total 40 sqft	681 Btuh
Ceiling total 2783 sqft	2613 Btuh
Floor total 2530 sqft	9575 Btuh
Infiltration 87 cfm	3536 Btuh
Duct loss	7393 Btuh
Subtotal	32471 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	32471 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2530 sqft)

Load component	Load
Window total 231 sqft	4074 Btuh
Wall total 1703 sqft	4423 Btuh
Door total 40 sqft	644 Btuh
Ceiling total 2783 sqft	3461 Btuh
Floor total	0 Btuh
Infiltration 65 cfm	1720 Btuh
Internal gain	4040 Btuh
Duct gain	8169 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	26531 Btuh
Latent gain(ducts)	1976 Btuh
Latent gain(infiltration)	2393 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1600 Btuh
Total latent gain	5969 Btuh
TOTAL HEAT GAIN	32500 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____ 01 / 15 / 2024

Wendy C. Smith

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Peter & Anna Lev

Project Title:
Lot 19 Russwood
Building Type: User

Lake City, FL 32024

1/15/2024

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 °F (MJ8 99%/Cu)
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 0.25	Vinyl	0.36	N	9.0		13.3	120 Btuh
2	2, NFRC 0.25	Vinyl	0.36	N	30.0		13.3	400 Btuh
3	2, NFRC 0.25	TIM	0.36	N	13.3		13.3	178 Btuh
4	2, NFRC 0.25	Vinyl	0.36	N	30.0		13.3	400 Btuh
5	2, NFRC 0.25	Vinyl	0.36	W	15.0		13.3	200 Btuh
6	2, NFRC 0.25	Vinyl	0.36	W	4.0		13.3	53 Btuh
7	2, NFRC 0.25	Vinyl	0.36	S	30.0		13.3	400 Btuh
8	2, NFRC 0.25	TIM	0.36	S	40.0		13.3	533 Btuh
9	2, NFRC 0.25	Vinyl	0.36	S	30.0		13.3	400 Btuh
10	2, NFRC 0.25	Vinyl	0.36	E	10.0		13.3	133 Btuh
11	2, NFRC 0.25	Vinyl	0.36	E	20.0		13.3	266 Btuh
Window Total					231.3(sqft)			3081 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	180		3.28	590 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	117		3.28	384 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	374		3.28	1228 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	117		3.28	384 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	134		3.28	440 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	243		3.28	798 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	215		3.28	704 Btuh
8	Frame - Wood	- Adj	(0.089)	13.0/0.0	192		3.28	631 Btuh
9	Frame - Wood	- Adj	(0.089)	13.0/0.0	132		3.28	432 Btuh
Wall Total					1703(sqft)			5592 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		20		17.0	340 Btuh
2	Insulated - Garage, n		(0.460)		20		17.0	340 Btuh
Door Total					40(sqft)			681Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/D/Shing		(0.025)	38.0/0.0	2783		0.94	2613 Btuh
Ceiling Total					2783(sqft)			2613Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	219.3 ft(perim.)		43.7	9575 Btuh
Floor Total					2530 sqft			9575 Btuh
Envelope Subtotal:								21542 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		Load
	Natural		0.23	22770	1.00	87.3		3536 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.295)							7393 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Peter & Anna Lev

Project Title:
Lot 19 Russwood
Building Type: User

Lake City, FL 32024

1/15/2024

All Zones	Sensible Subtotal All Zones	32471 Btuh
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WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss	32471 Btuh 0 Btuh 32471 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	34553 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

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Peter & Anna Lev

Project Title:
Lot 19 Russwood

Lake City, FL 32024

1/15/2024

Reference City: Gainesville, FL (Defaults)
Humidity difference: 54gr.

Temperature Difference: 24.0F(MJ8 99%/Cu)
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	0.25, 0.36	No	No	N		7.5ft.	1.0ft.	9.0	0.0	9.0	14	14	125	Btuh
2	2 NFRC	0.25, 0.36	No	No	N		7.5ft.	1.0ft.	30.0	0.0	30.0	14	14	417	Btuh
3	2 NFRC	0.25, 0.36	No	No	N		7.5ft.	1.0ft.	13.3	0.0	13.3	14	14	185	Btuh
4	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	1.0ft.	30.0	0.0	30.0	14	14	417	Btuh
5	2 NFRC	0.25, 0.36	No	No	W		1.5ft.	1.0ft.	15.0	0.7	14.3	14	33	477	Btuh
6	2 NFRC	0.25, 0.36	No	No	W		1.5ft.	1.0ft.	4.0	1.0	3.0	14	33	113	Btuh
7	2 NFRC	0.25, 0.36	No	No	S		1.5ft.	1.0ft.	30.0	30.0	0.0	14	16	417	Btuh
8	2 NFRC	0.25, 0.36	No	No	S		11.5f	1.0ft.	40.0	40.0	0.0	14	16	556	Btuh
9	2 NFRC	0.25, 0.36	No	No	S		1.5ft.	1.0ft.	30.0	30.0	0.0	14	16	417	Btuh
10	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	1.0ft.	10.0	0.5	9.5	14	33	318	Btuh
11	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	1.0ft.	20.0	1.2	18.8	14	33	632	Btuh
Window Total									231 (sqft)					4074 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load		
							Cav/Sheath								
1	Frame - Wood - Ext						0.09	13.0/0.0	179.7		2.7		486 Btuh		
2	Frame - Wood - Ext						0.09	13.0/0.0	117.0		2.7		317 Btuh		
3	Frame - Wood - Ext						0.09	13.0/0.0	374.0		2.7		1012 Btuh		
4	Frame - Wood - Ext						0.09	13.0/0.0	117.0		2.7		317 Btuh		
5	Frame - Wood - Ext						0.09	13.0/0.0	134.0		2.7		363 Btuh		
6	Frame - Wood - Ext						0.09	13.0/0.0	243.0		2.7		658 Btuh		
7	Frame - Wood - Ext						0.09	13.0/0.0	214.5		2.7		581 Btuh		
8	Frame - Wood - Adj						0.09	13.0/0.0	192.0		2.1		409 Btuh		
9	Frame - Wood - Adj						0.09	13.0/0.0	131.5		2.1		280 Btuh		
Wall Total									1703 (sqft)					4423 Btuh	
Doors	Type								Area (sqft)		HTM		Load		
	Insulated - Exterior								20.0		16.1		322 Btuh		
2	Insulated - Garage								20.0		16.1		322 Btuh		
Door Total									40 (sqft)					644 Btuh	
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)		HTM		Load		
	Vented Attic/DarkShingle/RB						0.025	38.0/0.0	2783.0		1.24		3461 Btuh		
Ceiling Total									2783 (sqft)					3461 Btuh	
Floors	Type						R-Value		Size		HTM		Load		
	Slab On Grade						0.0		2530 (ft-perimeter)		0.0		0 Btuh		
Floor Total									2530.0 (sqft)					0 Btuh	
Envelope Subtotal:													12602 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Peter & Anna Lev

Project Title:
Lot 19 Russwood

Climate:FL_GAINESVILLE_REGIONAL_A

Lake City, FL 32024

1/15/2024

Infiltration	Type Natural	Average ACH 0.17	Volume(cuft) 22770	Wall Ratio 1	CFM= 65.5	Load 1720 Btuh
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	2200	Load 4040 Btuh
	Sensible Envelope Load:					18362 Btuh
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.445)					8169 Btuh
	Sensible Load All Zones					26531 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Peter & Anna Lev

Project Title:
Lot 19 Russwood

Climate:FL_GAINESVILLE_REGIONAL_A

Lake City, FL 32024

1/15/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	18362 Btuh
	Sensible Duct Load	8169 Btuh
	Total Sensible Zone Loads	26531 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	26531 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	2393 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1976 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	5969 Btuh
	TOTAL GAIN	32500 Btuh

EQUIPMENT

1. Central Unit	#	29682 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