

Residential System Sizing Calculation

Summary

Rhett Smithey

Project Title:

Lot 3 Crosswinds - Model 1618

Lake City, FL 32025

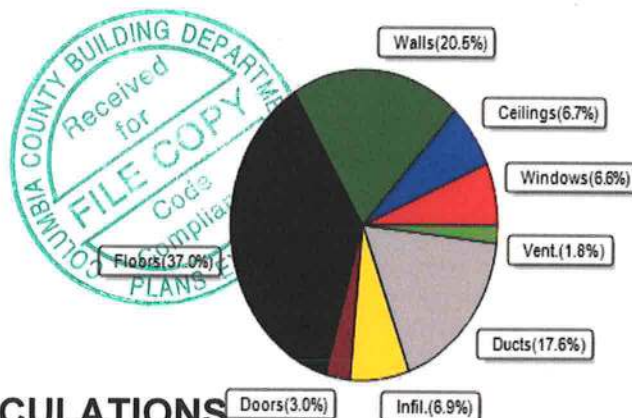
9/13/2023

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	22667 Btuh	Total cooling load calculation	20215 Btuh
Submitted heating capacity % of calc Btuh		Submitted cooling capacity % of calc Btuh	
Total (Electric Heat Pump) 107.7 24417		Sensible (SHR = 0.75) 83.4 13969	
Heat Pump + Auxiliary(0.0kW) 107.7 24417		Latent 134.7 4656	
		Total (Electric Heat Pump) 92.1 18625	

WINTER CALCULATIONS

Winter Heating Load (for 1618 sqft)

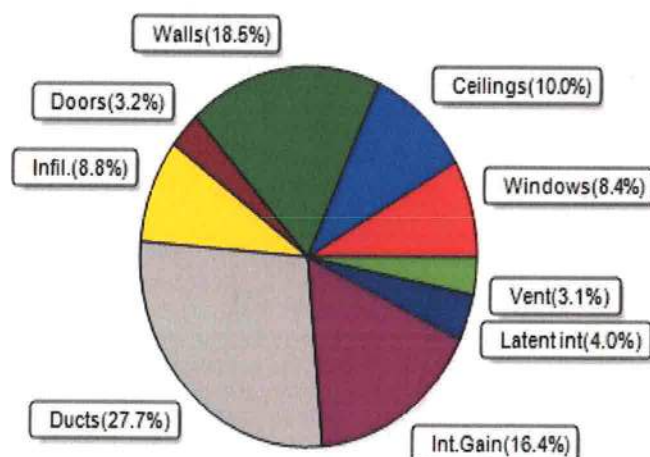
Load component		Load	
Window total	112 sqft	1486	Btuh
Wall total	1416 sqft	4650	Btuh
Door total	40 sqft	681	Btuh
Ceiling total	1618 sqft	1519	Btuh
Floor total	1618 sqft	8383	Btuh
Infiltration	39 cfm	1564	Btuh
Duct loss		3979	Btuh
Subtotal		22262	Btuh
Ventilation Ex:0 cfm; Sup:10 cfm		405	Btuh
TOTAL HEAT LOSS		22667	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1618 sqft)

Load component		Load	
Window total	112 sqft	1698	Btuh
Wall total	1416 sqft	3736	Btuh
Door total	40 sqft	644	Btuh
Ceiling total	1618 sqft	2012	Btuh
Floor total		0	Btuh
Infiltration	28 cfm	741	Btuh
Internal gain		3320	Btuh
Duct gain		4345	Btuh
Sens. Ventilation Ex:0 cfm; Sup:10 cfm		263	Btuh
Blower Load		0	Btuh
Total sensible gain		16759	Btuh
Latent gain(ducts)		1261	Btuh
Latent gain(infiltration)		1030	Btuh
Latent gain(ventilation)		365	Btuh
Latent gain(internal/occupants/other)		800	Btuh
Total latent gain		3456	Btuh
TOTAL HEAT GAIN		20215	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: *Will C. Smith*

DATE: 9 / 13 / 2023

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Rhett Smithey

Lake City, FL 32025

Project Title:
Lot 3 Crosswinds - Model 1618
Building Type: User

9/13/2023

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	S	6.3		13.3	83 Btuh
2	2, NFRC 0.25	Vinyl	0.36	S	18.7		13.3	249 Btuh
3	2, NFRC 0.25	Vinyl	0.36	E	9.3		13.3	124 Btuh
4	2, NFRC 0.25	Vinyl	0.36	E	2.7		13.3	36 Btuh
5	2, NFRC 0.25	Vinyl	0.36	N	28.0		13.3	373 Btuh
6	2, NFRC 0.25	Vinyl	0.36	N	9.3		13.3	124 Btuh
7	2, NFRC 0.25	Vinyl	0.36	N	18.7		13.3	249 Btuh
8	2, NFRC 0.25	Vinyl	0.36	N	18.7		13.3	249 Btuh
Window Total					111.6(sqft)			1486 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	124		3.28	406 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	119		3.28	392 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	345		3.28	1133 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	185		3.28	608 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	122		3.28	401 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	97		3.28	318 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	255		3.28	837 Btuh
8	Frame - Wood	- Adj	(0.089)	13.0/0.0	169		3.28	555 Btuh
Wall Total					1416(sqft)			4650 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/M/Shing		(0.025)	38.0/0.0	1618		0.94	1519 Btuh
Ceiling Total					1618(sqft)			1519Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	192.0 ft(perim.)		43.7	8383 Btuh
Floor Total					1618 sqft			8383 Btuh
Envelope Subtotal:								16719 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		Load
	Natural(Adjusted for ventilation)		0.16	14562	1.00	38.6		1564 Btuh
Duct load	Average sealed, R8.0, Supply(Att), Return(Att) (DLM of 0.218)							3979 Btuh
All Zones	Sensible Subtotal All Zones							22262 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Rhett Smithey

Lake City, FL 32025

Project Title:
Lot 3 Crosswinds - Model 1618
Building Type: User

9/13/2023

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	22262 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	405 Btuh
	Total Heat Loss	22667 Btuh

EQUIPMENT

1. Electric Heat Pump	#	24417 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

Rhett Smithey

Project Title:
Lot 3 Crosswinds - Model 1618

Lake City, FL 32025

9/13/2023

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	S		5.5ft.	1.0ft.	6.3	6.3	0.0	14	16	87	Btuh
2	2 NFRC	0.25, 0.36	No	No	S		2.0ft.	1.0ft.	18.7	18.7	0.0	14	16	259	Btuh
3	2 NFRC	0.25, 0.36	No	No	E		2.0ft.	1.0ft.	9.3	1.5	7.8	14	33	277	Btuh
4	2 NFRC	0.25, 0.36	No	No	E		2.0ft.	1.0ft.	2.7	2.6	0.0	14	33	38	Btuh
5	2 NFRC	0.25, 0.36	No	No	N		2.0ft.	1.0ft.	28.0	0.0	28.0	14	14	389	Btuh
6	2 NFRC	0.25, 0.36	No	No	N		10.5f	1.0ft.	9.3	0.0	9.3	14	14	130	Btuh
7	2 NFRC	0.25, 0.36	No	No	N		10.5f	1.0ft.	18.7	0.0	18.7	14	14	259	Btuh
8	2 NFRC	0.25, 0.36	No	No	N		2.0ft.	1.0ft.	18.7	0.0	18.7	14	14	259	Btuh
Window Total									112 (sqft)					1698 Btuh	
Walls	Type					U-Value	R-Value	Area(sqft)			HTM		Load		
							Cav/Sheath								
1	Frame - Wood - Ext						0.09	13.0/0.0	123.8			2.7		335 Btuh	
2	Frame - Wood - Ext						0.09	13.0/0.0	119.3			2.7		323 Btuh	
3	Frame - Wood - Ext						0.09	13.0/0.0	345.0			2.7		934 Btuh	
4	Frame - Wood - Ext						0.09	13.0/0.0	185.0			2.7		501 Btuh	
5	Frame - Wood - Ext						0.09	13.0/0.0	122.0			2.7		330 Btuh	
6	Frame - Wood - Ext						0.09	13.0/0.0	96.8			2.7		262 Btuh	
7	Frame - Wood - Ext						0.09	13.0/0.0	255.0			2.7		690 Btuh	
8	Frame - Wood - Adj						0.09	13.0/0.0	169.0			2.1		360 Btuh	
Wall Total									1416 (sqft)					3736 Btuh	
Doors	Type					Area (sqft)			HTM		Load				
1	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		
1	Vented Attic/Med/Shingle/RB						0.025	38.0/0.0	1618.0			1.24		2012 Btuh	
Ceiling Total									1618 (sqft)					2012 Btuh	
Floors	Type					R-Value		Size			HTM		Load		
1	Slab On Grade						0.0		1618 (ft-perimeter)			0.0		0 Btuh	
Floor Total									1618.0 (sqft)					0 Btuh	
Envelope Subtotal:														8090 Btuh	
Infiltration	Type	Average ACH				Volume(cuft)			Wall Ratio		CFM=		Load		
	Natural(Adjusted for ventilation)						0.12	14562			1	28.2		741 Btuh	
Internal gain	Occupants						Btuh/occupant			Appliance		Load			
	4						X	230	+	2400		3320 Btuh			
Sensible Envelope Load:														12151 Btuh	
Duct load	Average sealed,Supply(R8.0-Attic), Return(R8.0-Attic)										(DGM of 0.358)		4345 Btuh		
Sensible Load All Zones														16496 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Rhett Smitley

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Lot 3 Crosswinds - Model 1618

Lake City, FL 32025

9/13/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	12151 Btuh
	Sensible Duct Load	4345 Btuh
	Total Sensible Zone Loads	16496 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	263 Btuh
	Blower	0 Btuh
	Total sensible gain	16759 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	1030 Btuh
	Latent ventilation gain	365 Btuh
	Latent duct gain	1261 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3456 Btuh
	TOTAL GAIN	20215 Btuh

EQUIPMENT

1. Central Unit	#	18625 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