

Residential System Sizing Calculation

Summary

Project Title:
Little Residence

, FL

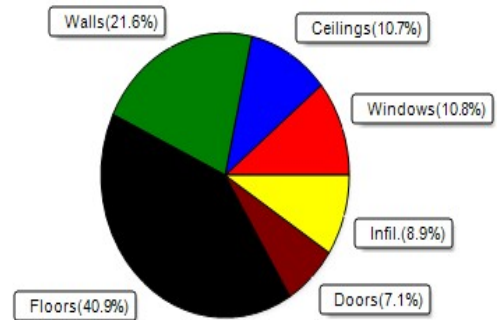
10/31/2024

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	36381 Btuh	Total cooling load calculation	26515 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	131.9 48000	Sensible (SHR = 0.75)	159.3 36000
Heat Pump + Auxiliary(0.0kW)	131.9 48000	Latent	306.4 12000
		Total (Electric Heat Pump)	181.0 48000

WINTER CALCULATIONS

Winter Heating Load (for 2862 sqft)

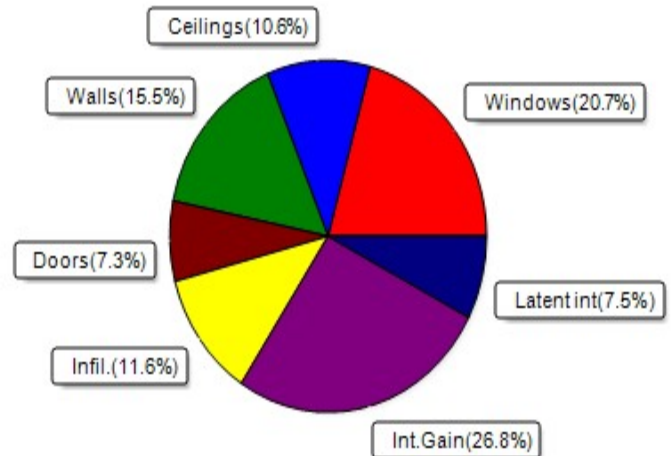
Load component	Load
Window total 380 sqft	3947 Btuh
Wall total 2473 sqft	7855 Btuh
Door total 140 sqft	2576 Btuh
Ceiling total 2862 sqft	3893 Btuh
Floor total 2862 sqft	14868 Btuh
Infiltration 74 cfm	3243 Btuh
Duct loss	0 Btuh
Subtotal	36381 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	36381 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2862 sqft)

Load component	Load
Window total 380 sqft	5484 Btuh
Wall total 2473 sqft	4105 Btuh
Door total 140 sqft	1932 Btuh
Ceiling total 2862 sqft	2822 Btuh
Floor total	0 Btuh
Infiltration 55 cfm	1155 Btuh
Internal gain	7100 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	22598 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1917 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	2000 Btuh
Total latent gain	3917 Btuh
TOTAL HEAT GAIN	26515 Btuh



8th Edition



EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____ 10-31-24

EnergyGauge® / USRCZB v8.1.02

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Little Residence

, FL

10/31/2024

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	1.3ft	24.0	0.0	24.0	9	9	220	Btuh	
2	2 NFRC	0.20, 0.26	No	No	E	1.5ft	1.3ft	36.0	0.0	36.0	9	24	872	Btuh	
3	2 NFRC	0.20, 0.26	No	No	N	1.5ft	1.3ft	20.0	0.0	20.0	9	9	183	Btuh	
4	2 NFRC	0.20, 0.26	No	No	N	1.5ft	1.3ft	72.0	0.0	72.0	9	9	659	Btuh	
5	2 NFRC	0.20, 0.26	No	No	N	1.5ft	1.3ft	30.0	0.0	30.0	9	9	274	Btuh	
6	2 NFRC	0.20, 0.26	No	No	E	1.5ft	1.3ft	75.0	0.0	75.0	9	24	1817	Btuh	
7	2 NFRC	0.20, 0.26	No	No	E	1.5ft	1.3ft	6.0	0.0	6.0	9	24	145	Btuh	
8	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	30.0	30.0	0.0	9	11	274	Btuh	
9	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	35.0	35.0	0.0	9	11	320	Btuh	
10	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	35.0	35.0	0.0	9	11	320	Btuh	
11	2 NFRC	0.20, 0.26	No	No	W	1.5ft	1.3ft	7.5	0.0	7.5	9	24	182	Btuh	
12	2 NFRC	0.20, 0.26	No	No	W	1.5ft	1.3ft	6.0	0.0	6.0	9	24	145	Btuh	
13	2 NFRC	0.20, 0.26	No	No	W	1.5ft	1.3ft	3.0	0.0	3.0	9	24	73	Btuh	
Window Total								380 (sqft)					5484 Btuh		
Walls	Type	U-Value					R-Value		Area(sqft)		HTM		Load		
							Cav/Sheath								
1	Frame - Wood - Ext					0.08		19.0/0.0		183.0		1.7		303 Btuh	
2	Frame - Wood - Ext					0.08		19.0/0.0		162.0		1.7		268 Btuh	
3	Frame - Wood - Ext					0.08		19.0/0.0		253.3		1.7		419 Btuh	
4	Frame - Wood - Ext					0.08		19.0/0.0		174.0		1.7		288 Btuh	
5	Frame - Wood - Ext					0.08		19.0/0.0		111.0		1.7		184 Btuh	
6	Frame - Wood - Ext					0.08		19.0/0.0		420.0		1.7		695 Btuh	
7	Frame - Wood - Ext					0.08		19.0/0.0		177.0		1.7		293 Btuh	
8	Frame - Wood - Ext					0.08		19.0/0.0		31.5		1.7		52 Btuh	
9	Frame - Wood - Ext					0.08		19.0/0.0		61.0		1.7		101 Btuh	
10	Frame - Wood - Ext					0.08		19.0/0.0		20.0		1.7		33 Btuh	
11	Frame - Wood - Ext					0.08		19.0/0.0		58.7		1.7		97 Btuh	
12	Frame - Wood - Ext					0.08		19.0/0.0		20.0		1.7		33 Btuh	
13	Frame - Wood - Ext					0.08		19.0/0.0		71.7		1.7		119 Btuh	
14	Frame - Wood - Adj					0.09		13.0/0.0		458.5		1.7		773 Btuh	
15	Frame - Wood - Ext					0.08		19.0/0.0		271.5		1.7		449 Btuh	
Wall Total								2473 (sqft)					4105 Btuh		
Doors	Type	U-Value					R-Value		Area (sqft)		HTM		Load		
1	Insulated - Exterior					0.08		19.0/0.0		48.0		13.8		662 Btuh	
2	Insulated - Exterior					0.08		19.0/0.0		24.0		13.8		331 Btuh	
3	Insulated - Exterior					0.08		19.0/0.0		48.0		13.8		662 Btuh	
4	Insulated - Garage					0.08		19.0/0.0		20.0		13.8		276 Btuh	
Door Total								140 (sqft)					1932 Btuh		
Ceilings	Type/Color/Surface	U-Value					R-Value		Area(sqft)		HTM		Load		
1	SnglAsmb no airsp/DarkMetal					0.034		0.0/30.0		2862.0		0.99		2822 Btuh	
Ceiling Total								2862 (sqft)					2822 Btuh		
Floors	Type	U-Value					R-Value		Size		HTM		Load		
1	Slab On Grade					0.0		0.0		2862 (ft-perimeter)		0.0		0 Btuh	
Floor Total								2862.0 (sqft)					0 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Little Residence

, FL

10/31/2024

	Envelope Subtotal:					14343 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.13	25758	1	55.5	1155 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		10	X 230	+	4800	7100 Btuh
	Sensible Envelope Load:					22598 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)					0 Btuh
	Sensible Load All Zones					22598 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Little Residence

, FL

10/31/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	22598 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	22598 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	22598 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1917 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (10.0 people @ 200 Btuh per person)	2000 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3917 Btuh
	TOTAL GAIN	26515 Btuh

EQUIPMENT

1. Central Unit	#	48000 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:
Little Residence
Building Type: User

, FL

10/31/2024

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	24.0		10.4	250 Btuh
2	2, NFRC 0.20	Vinyl	0.26	E	36.0		10.4	374 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	20.0		10.4	208 Btuh
4	2, NFRC 0.20	Vinyl	0.26	N	72.0		10.4	749 Btuh
5	2, NFRC 0.20	Vinyl	0.26	N	30.0		10.4	312 Btuh
6	2, NFRC 0.20	Vinyl	0.26	E	75.0		10.4	780 Btuh
7	2, NFRC 0.20	Vinyl	0.26	E	6.0		10.4	62 Btuh
8	2, NFRC 0.20	Vinyl	0.26	S	30.0		10.4	312 Btuh
9	2, NFRC 0.20	Vinyl	0.26	S	35.0		10.4	364 Btuh
10	2, NFRC 0.20	Vinyl	0.26	S	35.0		10.4	364 Btuh
11	2, NFRC 0.20	Vinyl	0.26	W	7.5		10.4	78 Btuh
12	2, NFRC 0.20	Vinyl	0.26	W	6.0		10.4	62 Btuh
13	2, NFRC 0.20	Vinyl	0.26	W	3.0		10.4	31 Btuh
Window Total					379.5(sqft)			3947 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.077)	19.0/0.0	183		3.09	566 Btuh
2	Frame - Wood	- Ext	(0.077)	19.0/0.0	162		3.09	501 Btuh
3	Frame - Wood	- Ext	(0.077)	19.0/0.0	253		3.09	783 Btuh
4	Frame - Wood	- Ext	(0.077)	19.0/0.0	174		3.09	538 Btuh
5	Frame - Wood	- Ext	(0.077)	19.0/0.0	111		3.09	343 Btuh
6	Frame - Wood	- Ext	(0.077)	19.0/0.0	420		3.09	1298 Btuh
7	Frame - Wood	- Ext	(0.077)	19.0/0.0	177		3.09	547 Btuh
8	Frame - Wood	- Ext	(0.077)	19.0/0.0	32		3.09	97 Btuh
9	Frame - Wood	- Ext	(0.077)	19.0/0.0	61		3.09	189 Btuh
10	Frame - Wood	- Ext	(0.077)	19.0/0.0	20		3.09	62 Btuh
11	Frame - Wood	- Ext	(0.077)	19.0/0.0	59		3.09	181 Btuh
12	Frame - Wood	- Ext	(0.077)	19.0/0.0	20		3.09	62 Btuh
13	Frame - Wood	- Ext	(0.077)	19.0/0.0	72		3.09	222 Btuh
14	Frame - Wood	- Adj	(0.089)	13.0/0.0	459		3.55	1628 Btuh
15	Frame - Wood	- Ext	(0.077)	19.0/0.0	272		3.09	839 Btuh
Wall Total					2473(sqft)			7855 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)		48		18.4	883 Btuh
2	Insulated - Exterior,	n	(0.460)		24		18.4	442 Btuh
3	Insulated - Exterior,	n	(0.460)		48		18.4	883 Btuh
4	Insulated - Garage,	n	(0.460)		20		18.4	368 Btuh
Door Total					140(sqft)			2576Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/D/Metal		(0.034)	0.0/30.0	2862		1.4	3893 Btuh
Ceiling Total					2862(sqft)			3893Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Little Residence
Building Type: User

10/31/2024

Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 315.0 ft(perim.) 2862 sqft	HTM= 47.2	Load 14868 Btuh 14868 Btuh
	Envelope Subtotal:					33138 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.17	Volume(cuft) 25758	Wall Ratio 1.00	CFM= 73.9	3243 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)					0 Btuh
All Zones	Sensible Subtotal All Zones					36381 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss Total Heat Loss	(Ex:0 cfm; Sup:0 cfm)	36381 Btuh 0 Btuh 36381 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	48000 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