

Residential System Sizing Calculation

Summary

Little Road
Lake City, FL 32024

Project Title:
Little Residence

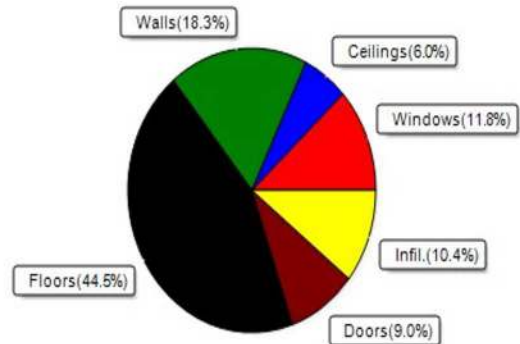
5/9/2022

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 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	29606 Btuh	Total cooling load calculation	19868 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	121.6 36000	Sensible (SHR = 0.85)	186.0 30600
Heat Pump + Auxiliary(0.0kW)	121.6 36000	Latent	157.9 5400
		Total (Electric Heat Pump)	181.2 36000

WINTER CALCULATIONS

Winter Heating Load (for 2710 sqft)

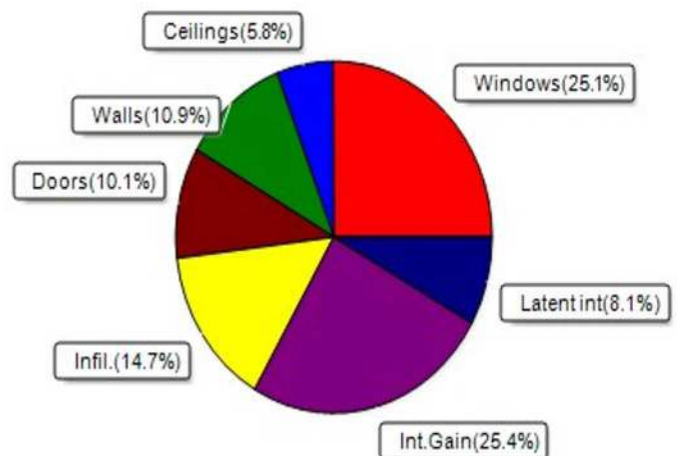
Load component		Load	
Window total	336 sqft	3494	Btuh
Wall total	2111 sqft	5411	Btuh
Door total	167 sqft	2674	Btuh
Ceiling total	2710 sqft	1780	Btuh
Floor total	2710 sqft	13169	Btuh
Infiltration	70 cfm	3078	Btuh
Duct loss		0	Btuh
Subtotal		29606	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		29606	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2710 sqft)

Load component		Load	
Window total	336 sqft	4985	Btuh
Wall total	2111 sqft	2165	Btuh
Door total	167 sqft	2005	Btuh
Ceiling total	2710 sqft	1157	Btuh
Floor total		0	Btuh
Infiltration	53 cfm	1097	Btuh
Internal gain		5040	Btuh
Duct gain		0	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		16449	Btuh
Latent gain(ducts)		0	Btuh
Latent gain(infiltration)		1820	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1600	Btuh
Total latent gain		3420	Btuh
TOTAL HEAT GAIN		19868	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

5 - 9 - 22

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Little Road
Lake City, FL 32024

Project Title:
Little Residence

5/9/2022

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

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	W		1.5ft.	2.3ft.	18.0	0.0	18.0	9	24	436	Btuh	
2	2 NFRC	0.20, 0.26	No	No	W		11.5f	2.3ft.	72.0	72.0	0.0	9	24	659	Btuh	
3	2 NFRC	0.20, 0.26	No	No	W		11.5f	2.3ft.	16.0	16.0	0.0	9	24	146	Btuh	
4	2 NFRC	0.20, 0.26	No	No	W		31.5f	2.3ft.	12.0	12.0	0.0	9	24	110	Btuh	
5	2 NFRC	0.20, 0.26	No	No	N		1.5ft.	2.3ft.	6.0	0.0	6.0	9	9	55	Btuh	
6	2 NFRC	0.20, 0.26	No	No	N		1.5ft.	2.3ft.	20.0	0.0	20.0	9	9	183	Btuh	
7	2 NFRC	0.20, 0.26	No	No	N		1.5ft.	2.3ft.	3.0	0.0	3.0	9	9	27	Btuh	
8	2 NFRC	0.20, 0.26	No	No	N		1.5ft.	2.3ft.	24.0	0.0	24.0	9	9	220	Btuh	
9	2 NFRC	0.20, 0.26	No	No	E		1.5ft.	2.3ft.	36.0	0.0	36.0	9	24	872	Btuh	
10	2 NFRC	0.20, 0.26	No	No	E		9.5ft.	2.3ft.	72.0	66.6	5.4	9	24	740	Btuh	
11	2 NFRC	0.20, 0.26	No	No	E		1.5ft.	2.3ft.	36.0	0.0	36.0	9	24	872	Btuh	
12	2 NFRC	0.20, 0.26	No	No	E		1.5ft.	2.3ft.	18.0	0.0	18.0	9	24	436	Btuh	
13	2 NFRC	0.20, 0.26	No	No	E		1.5ft.	2.3ft.	3.0	0.0	3.0	9	24	73	Btuh	
	Excursion													158	Btuh	
	Window Total								336 (sqft)						4985	Btuh
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load						
					Cav/Sheath											
1	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		140.7		1.0		144	Btuh				
2	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		129.1		1.0		132	Btuh				
3	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		212.3		1.0		218	Btuh				
4	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		47.6		1.0		49	Btuh				
5	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		222.4		1.0		228	Btuh				
6	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		171.7		1.0		176	Btuh				
7	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		34.2		1.0		35	Btuh				
8	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		119.1		1.0		122	Btuh				
9	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		122.7		1.0		126	Btuh				
10	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		35.8		1.0		37	Btuh				
11	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		330.0		1.0		338	Btuh				
12	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		35.8		1.0		37	Btuh				
13	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		101.7		1.0		104	Btuh				
14	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		407.6		1.0		418	Btuh				
	Wall Total							2111 (sqft)				2165	Btuh			
Doors	Type	Area (sqft)		HTM		Load										
1	Insulated - Exterior		48.0		12.0		576	Btuh								
2	Insulated - Exterior		17.8		12.0		213	Btuh								
3	Insulated - Exterior		20.0		12.0		240	Btuh								
4	Insulated - Exterior		33.3		12.0		400	Btuh								
5	Insulated - Exterior		48.0		12.0		576	Btuh								
	Door Total						167 (sqft)				2005	Btuh				
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load						
1	Cath/Sngl Assem/DarkShingle		0.016		30.0/30.0		2710.0		0.43		1157	Btuh				
	Ceiling Total						2710 (sqft)				1157	Btuh				
Floors	Type	R-Value		Size		HTM		Load								
1	Slab On Grade		0.0		2710 (ft-perimeter)		0.0				0	Btuh				
	Floor Total						2710.0 (sqft)				0	Btuh				

Manual J Summer Calculations

Residential Load - Component Details (continued)

Little Road
Lake City, FL 32024

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Little Residence

5/9/2022

	Envelope Subtotal:					10312 Btuh
Infiltration	Type Natural	Average ACH 0.13	Volume(cuft) 25295	Wall Ratio 1	CFM= 52.7	Load 1097 Btuh
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	3200	Load 5040 Btuh
	Sensible Envelope Load:					16449 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)					0 Btuh
	Sensible Load All Zones					16449 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Little Road
Lake City, FL 32024

Project Title:
Little Residence

Climate: FL_GAINESVILLE_REGIONAL_A

5/9/2022

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	16449 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	16449 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	16449 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1820 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3420 Btuh
	TOTAL GAIN	19868 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

Little Road
Lake City, FL 32024

Project Title:
Little Residence
Building Type: User

5/9/2022

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.20	Vinyl	0.26	W	18.0		10.4	187 Btuh
2	2, NFRC 0.20	Vinyl	0.26	W	72.0		10.4	749 Btuh
3	2, NFRC 0.20	Vinyl	0.26	W	16.0		10.4	166 Btuh
4	2, NFRC 0.20	Vinyl	0.26	W	12.0		10.4	125 Btuh
5	2, NFRC 0.20	Vinyl	0.26	N	6.0		10.4	62 Btuh
6	2, NFRC 0.20	Vinyl	0.26	N	20.0		10.4	208 Btuh
7	2, NFRC 0.20	Vinyl	0.26	N	3.0		10.4	31 Btuh
8	2, NFRC 0.20	Vinyl	0.26	N	24.0		10.4	250 Btuh
9	2, NFRC 0.20	Vinyl	0.26	E	36.0		10.4	374 Btuh
10	2, NFRC 0.20	Vinyl	0.26	E	72.0		10.4	749 Btuh
11	2, NFRC 0.20	Vinyl	0.26	E	36.0		10.4	374 Btuh
12	2, NFRC 0.20	Vinyl	0.26	E	18.0		10.4	187 Btuh
13	2, NFRC 0.20	Vinyl	0.26	E	3.0		10.4	31 Btuh
Window Total					336.0(sqft)			3494 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	141		2.56	361 Btuh
2	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	129		2.56	331 Btuh
3	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	212		2.56	544 Btuh
4	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	48		2.56	122 Btuh
5	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	222		2.56	570 Btuh
6	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	172		2.56	440 Btuh
7	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	34		2.56	88 Btuh
8	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	119		2.56	305 Btuh
9	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	123		2.56	315 Btuh
10	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	36		2.56	92 Btuh
11	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	330		2.56	846 Btuh
12	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	36		2.56	92 Btuh
13	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	102		2.56	261 Btuh
14	Conc Blk,Hollow - Ext		(0.064)	13.0/0.0	408		2.56	1045 Btuh
Wall Total					2111(sqft)			5411 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		48		16.0	768 Btuh
2	Insulated - Exterior, n		(0.400)		18		16.0	284 Btuh
3	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
4	Insulated - Exterior, n		(0.400)		33		16.0	533 Btuh
5	Insulated - Exterior, n		(0.400)		48		16.0	768 Btuh
Door Total					167(sqft)			2674Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Cathedral/D/Shing		(0.016)	30.0/30.0	2710		0.7	1780 Btuh
Ceiling Total					2710(sqft)			1780Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Little Road
Lake City, FL 32024

Project Title:
Little Residence
Building Type: User

5/9/2022

Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 279.0 ft(perim.) 2710 sqft	HTM= 47.2	Load 13169 Btuh 13169 Btuh
	Envelope Subtotal:					26528 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.17	Volume(cuft) 25295	Wall Ratio 1.00	CFM= 70.3	3078 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)					0 Btuh
All Zones	Sensible Subtotal All Zones					29606 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	29606 Btuh 0 Btuh 29606 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