

Residential System Sizing Calculation

Summary

Parnell Res

Project Title:
220691 Parnell

Lake City, FL

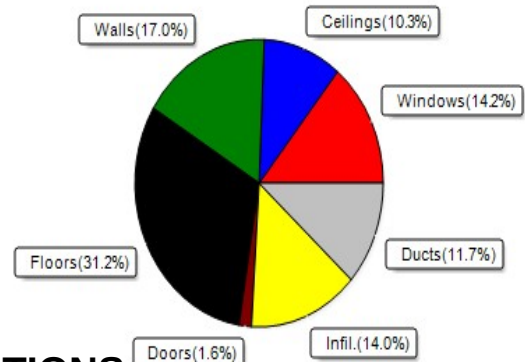
2022-06-13

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	39577 Btuh	Total cooling load calculation	31721 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	108.6 43000	Sensible (SHR = 0.75)	125.4 32250
Heat Pump + Auxiliary(0.0kW)	108.6 43000	Latent	179.3 10750
		Total (Electric Heat Pump)	135.6 43000

WINTER CALCULATIONS

Winter Heating Load (for 2998 sqft)

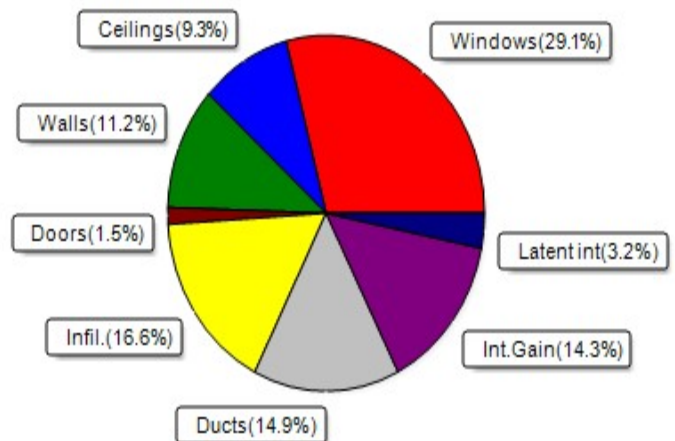
Load component		Load	
Window total	467 sqft	5607	Btuh
Wall total	2135 sqft	6718	Btuh
Door total	40 sqft	640	Btuh
Ceiling total	3235 sqft	4060	Btuh
Floor total	2998 sqft	12366	Btuh
Infiltration	127 cfm	5547	Btuh
Duct loss		4640	Btuh
Subtotal		39577	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		39577	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2998 sqft)

Load component		Load	
Window total	467 sqft	9223	Btuh
Wall total	2135 sqft	3540	Btuh
Door total	40 sqft	480	Btuh
Ceiling total	3235 sqft	2935	Btuh
Floor total		0	Btuh
Infiltration	95 cfm	1976	Btuh
Internal gain		4550	Btuh
Duct gain		3023	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		25726	Btuh
Latent gain(ducts)		1716	Btuh
Latent gain(infiltration)		3279	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1000	Btuh
Total latent gain		5995	Btuh
TOTAL HEAT GAIN		31721	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2022-06-13

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Parnell Res

Project Title:
220691 Parnell
Building Type: User

Lake City, FL

2022-06-13

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)
This calculation is for Worst Case. The house has been rotated 270 degrees.

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.20	Vinyl	0.30	W	32.0		12.0	384 Btuh
2	2, NFRC 0.20	Vinyl	0.30	W	18.0		12.0	216 Btuh
3	2, NFRC 0.20	Vinyl	0.30	S	54.0		12.0	648 Btuh
4	2, NFRC 0.20	Vinyl	0.30	W	72.0		12.0	864 Btuh
5	2, NFRC 0.20	Vinyl	0.30	S	18.0		12.0	216 Btuh
6	2, NFRC 0.20	Vinyl	0.30	W	72.0		12.0	864 Btuh
7	2, NFRC 0.20	Vinyl	0.30	W	32.0		12.0	384 Btuh
8	2, NFRC 0.20	Vinyl	0.30	N	15.0		12.0	180 Btuh
9	2, NFRC 0.20	Vinyl	0.30	N	12.0		12.0	144 Btuh
10	2, NFRC 0.20	Vinyl	0.30	N	36.0		12.0	432 Btuh
11	2, NFRC 0.20	Vinyl	0.30	E	24.0		12.0	288 Btuh
12	2, NFRC 0.20	Vinyl	0.30	E	5.6		12.0	67 Btuh
13	2, NFRC 0.20	Vinyl	0.30	E	32.0		12.0	384 Btuh
14	2, NFRC 0.20	Vinyl	0.30	E	9.3		12.0	112 Btuh
15	2, NFRC 0.20	Vinyl	0.30	E	6.3		12.0	76 Btuh
16	2, NFRC 0.20	Vinyl	0.30	E	12.0		12.0	144 Btuh
17	2, NFRC 0.20	Vinyl	0.30	E	5.0		12.0	60 Btuh
18	2, NFRC 0.20	Vinyl	0.30	S	4.0		12.0	48 Btuh
19	2, NFRC 0.20	Vinyl	0.30	S	8.0		12.0	96 Btuh
Window Total					467.2(sqft)			5607 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.077)	19.0/0.0	93		3.09	288 Btuh
2	Frame - Wood	- Ext	(0.077)	19.0/0.0	59		3.09	183 Btuh
3	Frame - Wood	- Ext	(0.077)	19.0/0.0	91		3.09	282 Btuh
4	Frame - Wood	- Ext	(0.077)	19.0/0.0	32		3.09	99 Btuh
5	Frame - Wood	- Ext	(0.077)	19.0/0.0	189		3.09	585 Btuh
6	Frame - Wood	- Ext	(0.077)	19.0/0.0	515		3.09	1593 Btuh
7	Frame - Wood	- Adj	(0.089)	13.0/0.0	153		3.55	544 Btuh
8	Frame - Wood	- Adj	(0.089)	13.0/0.0	56		3.55	198 Btuh
9	Frame - Wood	- Adj	(0.089)	13.0/0.0	46		3.55	163 Btuh
10	Frame - Wood	- Ext	(0.077)	19.0/0.0	94		3.09	290 Btuh
11	Frame - Wood	- Ext	(0.077)	19.0/0.0	38		3.09	116 Btuh
12	Frame - Wood	- Ext	(0.077)	19.0/0.0	71		3.09	218 Btuh
13	Frame - Wood	- Ext	(0.077)	19.0/0.0	113		3.09	350 Btuh
14	Frame - Wood	- Ext	(0.077)	19.0/0.0	55		3.09	169 Btuh
15	Frame - Wood	- Ext	(0.077)	19.0/0.0	13		3.09	41 Btuh
16	Frame - Wood	- Ext	(0.077)	19.0/0.0	78		3.09	242 Btuh
17	Frame - Wood	- Ext	(0.077)	19.0/0.0	438		3.09	1354 Btuh
Wall Total					2135(sqft)			6718 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Parnell Res
Lake City, FL

Project Title:
220691 Parnell
Building Type: User

2022-06-13

Doors	Type	Storm Ueff.		Area	X	HTM=	Load
1	Insulated - Garage,	n (0.400)		24		16.0	384 Btuh
2	Insulated - Exterior,	n (0.400)		16		16.0	256 Btuh
	Door Total			40(sqft)			640Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area	X	HTM=	Load
1	Unvent Attic/D/Shing	(0.241)	0.0/22.0	2998		1.2	3613 Btuh
2	Knee Wall/D/Shing	(0.047)	0.0/22.0	237		1.9	447 Btuh
	Ceiling Total			3235(sqft)			4060Btuh
Floors	Type	Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	262.0 ft(perim.)		47.2	12366 Btuh
	Floor Total			2998 sqft			12366 Btuh
	Envelope Subtotal:						29391 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural	0.24	31179	1.00	126.7		5547 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.133)						4640 Btuh
All Zones	Sensible Subtotal All Zones						39577 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	39577 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	39577 Btuh

EQUIPMENT

1. Electric Heat Pump	#	43000 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

Parnell Res

Project Title:
220691 Parnell

Lake City, FL

2022-06-13

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

This calculation is for Worst Case. The house has been rotated 270 degrees.

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	W	1.5ft	1.0ft	32.0	1.3	30.7	10	25	780	Btuh	
2	2 NFRC	0.20, 0.30	No	No	W	1.5ft	1.0ft	18.0	0.7	17.3	10	25	439	Btuh	
3	2 NFRC	0.20, 0.30	No	No	S	1.5ft	1.0ft	54.0	54.0	0.0	10	11	535	Btuh	
4	2 NFRC	0.20, 0.30	No	No	W	1.5ft	1.0ft	72.0	2.9	69.1	10	25	1754	Btuh	
5	2 NFRC	0.20, 0.30	No	No	S	1.5ft	1.0ft	18.0	18.0	0.0	10	11	178	Btuh	
6	2 NFRC	0.20, 0.30	No	No	W	1.5ft	1.0ft	72.0	2.9	69.1	10	25	1754	Btuh	
7	2 NFRC	0.20, 0.30	No	No	W	1.5ft	1.0ft	32.0	1.3	30.7	10	25	780	Btuh	
8	2 NFRC	0.20, 0.30	No	No	N	1.5ft	1.0ft	15.0	0.0	15.0	10	10	149	Btuh	
9	2 NFRC	0.20, 0.30	No	No	N	1.5ft	1.0ft	12.0	0.0	12.0	10	10	119	Btuh	
10	2 NFRC	0.20, 0.30	No	No	N	1.5ft	1.0ft	36.0	0.0	36.0	10	10	357	Btuh	
11	2 NFRC	0.20, 0.30	No	No	E	1.5ft	7.0ft	24.0	0.0	24.0	10	25	600	Btuh	
12	2 NFRC	0.20, 0.30	No	No	E	1.5ft	5.5ft	5.6	0.0	5.6	10	25	139	Btuh	
13	2 NFRC	0.20, 0.30	No	No	E	9.3ft	1.0ft	32.0	27.0	5.0	10	25	393	Btuh	
14	2 NFRC	0.20, 0.30	No	No	E	1.5ft	0.6ft	9.3	3.1	6.2	10	25	187	Btuh	
15	2 NFRC	0.20, 0.30	No	No	E	1.5ft	0.6ft	6.3	2.1	4.2	10	25	127	Btuh	
16	2 NFRC	0.20, 0.30	No	No	E	1.5ft	3.0ft	12.0	0.0	12.0	10	25	300	Btuh	
17	2 NFRC	0.20, 0.30	No	No	E	1.5ft	1.0ft	5.0	0.5	4.5	10	25	118	Btuh	
18	2 NFRC	0.20, 0.30	No	No	S	1.5ft	1.0ft	4.0	4.0	0.0	10	11	40	Btuh	
19	2 NFRC	0.20, 0.30	No	No	S	1.5ft	1.0ft	8.0	8.0	0.0	10	11	79	Btuh	
	Excursion												398	Btuh	
	Window Total							467 (sqft)						9223	Btuh
Walls	Type					U-Value	R-Value	Area(sqft)			HTM		Load		
							Cav/Sheath								
1	Frame - Wood - Ext					0.08	19.0/0.0	93.3			1.7		154	Btuh	
2	Frame - Wood - Ext					0.08	19.0/0.0	59.3			1.7		98	Btuh	
3	Frame - Wood - Ext					0.08	19.0/0.0	91.3			1.7		151	Btuh	
4	Frame - Wood - Ext					0.08	19.0/0.0	32.0			1.7		53	Btuh	
5	Frame - Wood - Ext					0.08	19.0/0.0	189.3			1.7		313	Btuh	
6	Frame - Wood - Ext					0.08	19.0/0.0	515.3			1.7		852	Btuh	
7	Frame - Wood - Adj					0.09	13.0/0.0	153.3			1.7		259	Btuh	
8	Frame - Wood - Adj					0.09	13.0/0.0	55.8			1.7		94	Btuh	
9	Frame - Wood - Adj					0.09	13.0/0.0	46.0			1.7		78	Btuh	
10	Frame - Wood - Ext					0.08	19.0/0.0	93.8			1.7		155	Btuh	
11	Frame - Wood - Ext					0.08	19.0/0.0	37.5			1.7		62	Btuh	
12	Frame - Wood - Ext					0.08	19.0/0.0	70.7			1.7		117	Btuh	
13	Frame - Wood - Ext					0.08	19.0/0.0	113.3			1.7		187	Btuh	
14	Frame - Wood - Ext					0.08	19.0/0.0	54.7			1.7		90	Btuh	
15	Frame - Wood - Ext					0.08	19.0/0.0	13.3			1.7		22	Btuh	
16	Frame - Wood - Ext					0.08	19.0/0.0	78.3			1.7		130	Btuh	
17	Frame - Wood - Ext					0.08	19.0/0.0	438.0			1.7		724	Btuh	
	Wall Total							2135 (sqft)						3540	Btuh
Doors	Type							Area (sqft)			HTM		Load		
1	Insulated - Garage							24.0			12.0		288	Btuh	
2	Insulated - Exterior							16.0			12.0		192	Btuh	
	Door Total							40 (sqft)						480	Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Parnell Res

Project Title:
220691 Parnell

Climate:FL_GAINESVILLE_REGIONAL_A

Lake City, FL

2022-06-13

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Unvented Attic/DarkShingle	0.241	0.0/22.0	2998.0	0.96	2890 Btuh
2	Knee Wall/DarkShingle	0.047	0.0/22.0	237.0	0.19	45 Btuh
	Ceiling Total			3235 (sqft)		2935 Btuh
Floors	Type		R-Value	Size	HTM	Load
1	Slab On Grade		0.0	2998 (ft-perimeter)	0.0	0 Btuh
	Floor Total			2998.0 (sqft)		0 Btuh
	Envelope Subtotal:					16177 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.18	31179	1	95.0	1976 Btuh
Internal gain		Occupants	Btuh/occupant	Appliance		Load
		5	X 230	+	3400	4550 Btuh
	Sensible Envelope Load:					22703 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.133)	3023 Btuh
	Sensible Load All Zones					25726 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Parnell Res
Lake City, FL

Project Title:
220691 Parnell

Climate:FL_GAINESVILLE_REGIONAL_A

2022-06-13

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	22703 Btuh
	Sensible Duct Load	3023 Btuh
	Total Sensible Zone Loads	25726 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	25726 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	3279 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1716 Btuh
	Latent occupant gain (5.0 people @ 200 Btuh per person)	1000 Btuh
	Latent other gain	0 Btuh
	Latent total gain	5995 Btuh
	TOTAL GAIN	31721 Btuh

EQUIPMENT

1. Central Unit	#	43000 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