

Residential System Sizing Calculation

Summary

Project Title:
Gonzalez Residence

, FL

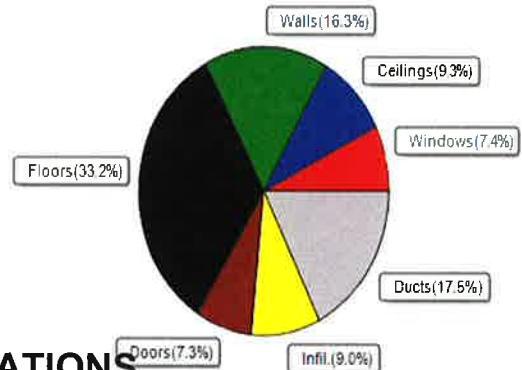
11/11/2021

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	44704 Btuh	Total cooling load calculation	32686 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	107.4 48000	Sensible (SHR = 0.85)	149.8 40800
Heat Pump + Auxiliary(0.0kW)	107.4 48000	Latent	132.1 7200
		Total (Electric Heat Pump)	146.9 48000

WINTER CALCULATIONS

Winter Heating Load (for 3199 sqft)

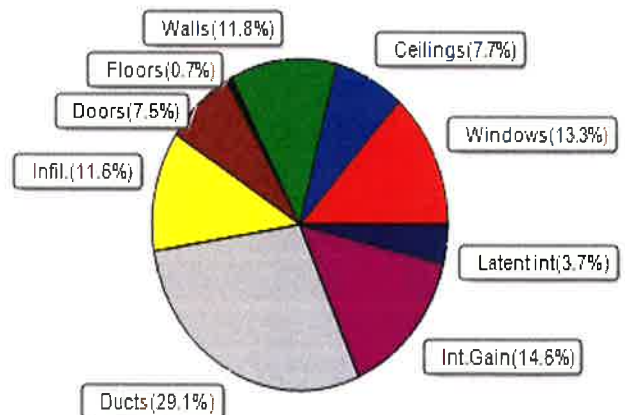
Load component		Load	
Window total	316 sqft	3286	Btuh
Wall total	2389 sqft	7301	Btuh
Door total	205 sqft	3285	Btuh
Ceiling total	3199 sqft	4141	Btuh
Floor total	See detail report	14845	Btuh
Infiltration	91 cfm	4002	Btuh
Duct loss		7843	Btuh
Subtotal		44704	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		44704	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 3199 sqft)

Load component		Load	
Window total	316 sqft	4338	Btuh
Wall total	2389 sqft	3859	Btuh
Door total	205 sqft	2464	Btuh
Ceiling total	3199 sqft	2505	Btuh
Floor total		223	Btuh
Infiltration	69 cfm	1426	Btuh
Internal gain		4780	Btuh
Duct gain		7640	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		27235	Btuh
Latent gain(ducts)		1886	Btuh
Latent gain(infiltration)		2366	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
Total latent gain		5452	Btuh
TOTAL HEAT GAIN		32686	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY:

DATE: 12.7.21

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Gonzalez Residence

, FL

11/11/2021

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	N		16.5f	2.3ft	8.0	0.0	8.0	9	9	73	Btuh	
2	2 NFRC	0.20, 0.26	No	No	N		16.5f	2.3ft	16.0	0.0	16.0	9	9	146	Btuh	
3	2 NFRC	0.20, 0.26	No	No	N		1.5ft	2.3ft	18.0	0.0	18.0	9	9	165	Btuh	
4	2 NFRC	0.20, 0.26	No	No	E		1.5ft	2.3ft	4.0	0.0	4.0	9	24	97	Btuh	
5	2 NFRC	0.20, 0.26	No	No	E		1.5ft	2.3ft	36.0	0.0	36.0	9	24	872	Btuh	
6	2 NFRC	0.20, 0.26	No	No	S		1.5ft	2.3ft	36.0	36.0	0.0	9	11	329	Btuh	
7	2 NFRC	0.20, 0.26	No	No	S		5.5ft	2.3ft	8.0	8.0	0.0	9	11	73	Btuh	
8	2 NFRC	0.20, 0.26	No	No	S		7.5ft	2.3ft	90.0	90.0	0.0	9	11	823	Btuh	
9	2 NFRC	0.20, 0.26	No	No	S		5.5ft	2.3ft	8.0	8.0	0.0	9	11	73	Btuh	
10	2 NFRC	0.20, 0.26	No	No	S		1.5ft	2.3ft	36.0	36.0	0.0	9	11	329	Btuh	
11	2 NFRC	0.20, 0.26	No	No	W		1.5ft	2.3ft	36.0	0.0	36.0	9	24	872	Btuh	
12	2 NFRC	0.20, 0.26	No	No	W		1.5ft	2.3ft	20.0	0.0	20.0	9	24	484	Btuh	
	Window Total								316 (sqft)					4338		Btuh
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load						
1	Frame - Wood - Ext		0.08		19.0/0.6		55.3		1.6		89	Btuh				
2	Frame - Wood - Ext		0.08		19.0/0.6		169.0		1.6		272	Btuh				
3	Frame - Wood - Ext		0.08		19.0/0.6		148.3		1.6		239	Btuh				
4	Frame - Wood - Ext		0.08		19.0/0.6		142.0		1.6		228	Btuh				
5	Frame - Wood - Ext		0.08		19.0/0.6		164.3		1.6		264	Btuh				
6	Frame - Wood - Ext		0.08		19.0/0.6		20.0		1.6		32	Btuh				
7	Frame - Wood - Ext		0.08		19.0/0.6		97.3		1.6		157	Btuh				
8	Frame - Wood - Ext		0.08		19.0/0.6		61.7		1.6		99	Btuh				
9	Frame - Wood - Ext		0.08		19.0/0.6		195.0		1.6		314	Btuh				
10	Frame - Wood - Ext		0.08		19.0/0.6		100.7		1.6		162	Btuh				
11	Frame - Wood - Ext		0.08		19.0/0.6		90.0		1.6		145	Btuh				
12	Frame - Wood - Ext		0.08		19.0/0.6		90.3		1.6		145	Btuh				
13	Frame - Wood - Ext		0.08		19.0/0.6		30.0		1.6		48	Btuh				
14	Frame - Wood - Ext		0.08		19.0/0.6		178.7		1.6		287	Btuh				
15	Frame - Wood - Ext		0.08		19.0/0.6		30.0		1.6		48	Btuh				
16	Frame - Wood - Ext		0.08		19.0/0.6		82.0		1.6		132	Btuh				
17	Frame - Wood - Ext		0.08		19.0/0.6		30.0		1.6		48	Btuh				
18	Frame - Wood - Ext		0.08		19.0/0.6		115.7		1.6		186	Btuh				
19	Frame - Wood - Ext		0.08		19.0/0.6		155.7		1.6		250	Btuh				
20	Frame - Wood - Ext		0.08		19.0/0.6		40.0		1.6		64	Btuh				
21	Frame - Wood - Ext		0.08		19.0/0.6		130.0		1.6		209	Btuh				
22	Frame - Wood - Ext		0.08		19.0/0.6		40.0		1.6		64	Btuh				
23	Frame - Wood - Adj		0.09		13.0/0.0		222.7		1.7		376	Btuh				
	Wall Total						2389 (sqft)					3859		Btuh		
Doors	Type	Area (sqft)		HTM		Load										
1	Insulated - Exterior		21.3		12.0		256	Btuh								
2	Insulated - Exterior		112.0		12.0		1344	Btuh								
3	Insulated - Exterior		48.0		12.0		576	Btuh								
4	Insulated - Garage		24.0		12.0		288	Btuh								
	Door Total						205 (sqft)					2464		Btuh		
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load						
1	Cath/Sngl Assem/Light/Metal		0.032		30.0/0.0		3199.0		0.78		2505	Btuh				
	Ceiling Total						3199 (sqft)					2505		Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Gonzalez Residence

, FL

11/11/2021

Floors	Type	R-Value	Size	HTM	Load	
1	Slab On Grade	0.0	2754 (ft-perimeter)	0.0	0 Btuh	
2	Raised Wood - Adj	30.0	445 (sqft)	0.5	223 Btuh	
	Floor Total		3199.0 (sqft)		223 Btuh	
	Envelope Subtotal:				13389 Btuh	
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.13	31990	1	68.5	1426 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		6	X 230 +		3400	4780 Btuh
	Sensible Envelope Load:					19594 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)			(DGM of 0.390)		7640 Btuh
	Sensible Load All Zones					27235 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Gonzalez Residence

, FL

11/11/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	19594 Btuh
	Sensible Duct Load	7640 Btuh
	Total Sensible Zone Loads	27235 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	27235 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2366 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1886 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	5452 Btuh
	TOTAL GAIN	32686 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

, FL

Project Title:
Gonzalez Residence
Building Type: User

11/11/2021

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	N	8.0		10.4	83 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	16.0		10.4	166 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	18.0		10.4	187 Btuh
4	2, NFRC 0.20	Vinyl	0.26	E	4.0		10.4	42 Btuh
5	2, NFRC 0.20	Vinyl	0.26	E	36.0		10.4	374 Btuh
6	2, NFRC 0.20	Vinyl	0.26	S	36.0		10.4	374 Btuh
7	2, NFRC 0.20	Vinyl	0.26	S	8.0		10.4	83 Btuh
8	2, NFRC 0.20	Vinyl	0.26	S	90.0		10.4	936 Btuh
9	2, NFRC 0.20	Vinyl	0.26	S	8.0		10.4	83 Btuh
10	2, NFRC 0.20	Vinyl	0.26	S	36.0		10.4	374 Btuh
11	2, NFRC 0.20	Vinyl	0.26	W	36.0		10.4	374 Btuh
12	2, NFRC 0.20	Vinyl	0.26	W	20.0		10.4	208 Btuh
Window Total					316.0(sqft)			3286 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.075)	19.0/0.6	55		3.01	166 Btuh
2	Frame - Wood	- Ext	(0.075)	19.0/0.6	169		3.01	508 Btuh
3	Frame - Wood	- Ext	(0.075)	19.0/0.6	148		3.01	446 Btuh
4	Frame - Wood	- Ext	(0.075)	19.0/0.6	142		3.01	427 Btuh
5	Frame - Wood	- Ext	(0.075)	19.0/0.6	164		3.01	494 Btuh
6	Frame - Wood	- Ext	(0.075)	19.0/0.6	20		3.01	60 Btuh
7	Frame - Wood	- Ext	(0.075)	19.0/0.6	97		3.01	293 Btuh
8	Frame - Wood	- Ext	(0.075)	19.0/0.6	62		3.01	185 Btuh
9	Frame - Wood	- Ext	(0.075)	19.0/0.6	195		3.01	586 Btuh
10	Frame - Wood	- Ext	(0.075)	19.0/0.6	101		3.01	303 Btuh
11	Frame - Wood	- Ext	(0.075)	19.0/0.6	90		3.01	271 Btuh
12	Frame - Wood	- Ext	(0.075)	19.0/0.6	90		3.01	272 Btuh
13	Frame - Wood	- Ext	(0.075)	19.0/0.6	30		3.01	90 Btuh
14	Frame - Wood	- Ext	(0.075)	19.0/0.6	179		3.01	537 Btuh
15	Frame - Wood	- Ext	(0.075)	19.0/0.6	30		3.01	90 Btuh
16	Frame - Wood	- Ext	(0.075)	19.0/0.6	82		3.01	246 Btuh
17	Frame - Wood	- Ext	(0.075)	19.0/0.6	30		3.01	90 Btuh
18	Frame - Wood	- Ext	(0.075)	19.0/0.6	116		3.01	348 Btuh
19	Frame - Wood	- Ext	(0.075)	19.0/0.6	156		3.01	468 Btuh
20	Frame - Wood	- Ext	(0.075)	19.0/0.6	40		3.01	120 Btuh
21	Frame - Wood	- Ext	(0.075)	19.0/0.6	130		3.01	391 Btuh
22	Frame - Wood	- Ext	(0.075)	19.0/0.6	40		3.01	120 Btuh
23	Frame - Wood	- Adj	(0.089)	13.0/0.0	223		3.55	791 Btuh
Wall Total					2389(sqft)			7301 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Gonzalez Residence
Building Type: User

FL

11/11/2021

Doors	Type	Storm Ueff.		Area X	HTM=	Load
1	Insulated - Exterior, n	(0.400)		21	16.0	341 Btuh
2	Insulated - Exterior, n	(0.400)		112	16.0	1792 Btuh
3	Insulated - Exterior, n	(0.400)		48	16.0	768 Btuh
4	Insulated - Garage, n	(0.400)		24	16.0	384 Btuh
	Door Total			205(sqft)		3285Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Cathedral/L/Metal	(0.032)	30.0/0.0	3199	1.3	4141 Btuh
	Ceiling Total			3199(sqft)		4141Btuh
Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	301.0 ft(perim.)	47.2	14207 Btuh
2	Raised Wood - Adj	(0.036)	30.0	445.0 sqft	1.4	638 Btuh
	Floor Total			3199 sqft		14845 Btuh
	Envelope Subtotal:					32859 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural	0.17	31990	1.00	91.4	4002 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.213)					7843 Btuh
All Zones	Sensible Subtotal All Zones					44704 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	44704 Btuh 0 Btuh 44704 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	48000 Btuh
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Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Gonzalez Residence
Building Type: User

, FL

11/11/2021

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