

Residential System Sizing Calculation

Summary

Project Title:
Garcia Residence

, FL

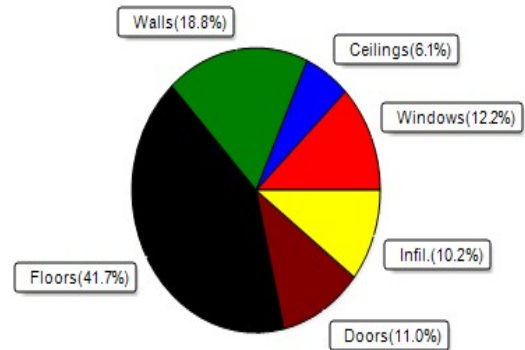
4/8/2024

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	31656 Btuh	Total cooling load calculation	20928 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	151.6 48000	Sensible (SHR = 0.75)	206.6 36000
Heat Pump + Auxiliary(0.0kW)	151.6 48000	Latent	342.5 12000
		Total (Electric Heat Pump)	229.4 48000

WINTER CALCULATIONS

Winter Heating Load (for 2725 sqft)

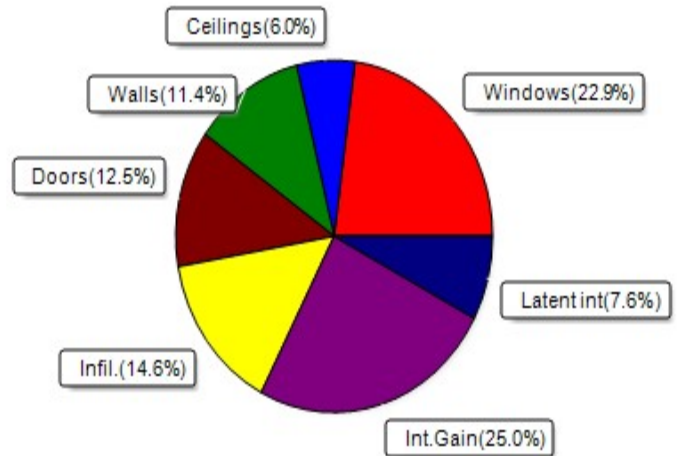
Load component	Load
Window total 370 sqft	3848 Btuh
Wall total 2324 sqft	5959 Btuh
Door total 189 sqft	3484 Btuh
Ceiling total 2725 sqft	1929 Btuh
Floor total 2725 sqft	13216 Btuh
Infiltration 73 cfm	3221 Btuh
Duct loss	0 Btuh
Subtotal	31656 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	31656 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2725 sqft)

Load component	Load
Window total 370 sqft	4786 Btuh
Wall total 2324 sqft	2383 Btuh
Door total 189 sqft	2613 Btuh
Ceiling total 2725 sqft	1254 Btuh
Floor total	0 Btuh
Infiltration 55 cfm	1147 Btuh
Internal gain	5240 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	17424 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1904 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1600 Btuh
Total latent gain	3504 Btuh
TOTAL HEAT GAIN	20928 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

4-8-24

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Garcia Residence

, FL

4/8/2024

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	36.0	0.0	36.0	9	9	329	Btuh	
2	2 NFRC	0.20, 0.26	No	No	N	1.5ft	1.3ft	45.0	0.0	45.0	9	9	412	Btuh	
3	2 NFRC	0.20, 0.26	No	No	N	1.5ft	1.3ft	8.0	0.0	8.0	9	9	73	Btuh	
4	2 NFRC	0.20, 0.26	No	No	N	1.5ft	1.3ft	16.0	0.0	16.0	9	9	146	Btuh	
5	2 NFRC	0.20, 0.26	No	No	E	1.5ft	1.3ft	3.0	0.0	3.0	9	24	73	Btuh	
6	2 NFRC	0.20, 0.26	No	No	E	1.5ft	1.3ft	20.0	0.0	20.0	9	24	484	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	E	1.5ft	1.3ft	24.0	0.0	24.0	9	24	581	Btuh	
9	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	36.0	36.0	0.0	9	11	329	Btuh	
10	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	10.0	10.0	0.0	9	11	91	Btuh	
11	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	90.0	90.0	0.0	9	11	823	Btuh	
12	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	36.0	36.0	0.0	9	11	329	Btuh	
13	2 NFRC	0.20, 0.26	No	No	W	1.5ft	1.3ft	36.0	0.0	36.0	9	24	872	Btuh	
14	2 NFRC	0.20, 0.26	No	No	W	1.5ft	1.3ft	4.0	0.0	4.0	9	24	97	Btuh	
	Window Total							370 (sqft)					4786 Btuh		
Walls	Type	U-Value					R-Value		Area(sqft)		HTM		Load		
							Cav/Sheath								
1	Concrete Blk,Hollow - Ext					0.06	13.0/0.0		134.0		1.0		137 Btuh		
2	Concrete Blk,Hollow - Ext					0.06	13.0/0.0		110.0		1.0		113 Btuh		
3	Concrete Blk,Hollow - Ext					0.06	13.0/0.0		246.3		1.0		253 Btuh		
4	Concrete Blk,Hollow - Ext					0.06	13.0/0.0		43.7		1.0		45 Btuh		
5	Concrete Blk,Hollow - Ext					0.06	13.0/0.0		246.3		1.0		253 Btuh		
6	Concrete Blk,Hollow - Ext					0.06	13.0/0.0		144.3		1.0		148 Btuh		
7	Concrete Blk,Hollow - Ext					0.06	13.0/0.0		35.0		1.0		36 Btuh		
8	Concrete Blk,Hollow - Ext					0.06	13.0/0.0		137.7		1.0		141 Btuh		
9	Concrete Blk,Hollow - Ext					0.06	13.0/0.0		130.7		1.0		134 Btuh		
10	Concrete Blk,Hollow - Ext					0.06	13.0/0.0		120.0		1.0		123 Btuh		
11	Concrete Blk,Hollow - Ext					0.06	13.0/0.0		332.0		1.0		340 Btuh		
12	Concrete Blk,Hollow - Ext					0.06	13.0/0.0		90.0		1.0		92 Btuh		
13	Concrete Blk,Hollow - Ext					0.06	13.0/0.0		134.0		1.0		137 Btuh		
14	Concrete Blk,Hollow - Ext					0.06	13.0/0.0		420.0		1.0		431 Btuh		
	Wall Total							2324 (sqft)					2383 Btuh		
Doors	Type								Area (sqft)		HTM		Load		
1	Insulated - Exterior							48.0		13.8		662 Btuh			
2	Insulated - Exterior							21.3		13.8		294 Btuh			
3	Insulated - Exterior							24.0		13.8		331 Btuh			
4	Insulated - Exterior							48.0		13.8		662 Btuh			
5	Insulated - Exterior							48.0		13.8		662 Btuh			
	Door Total							189 (sqft)					2613 Btuh		
Ceilings	Type/Color/Surface	U-Value					R-Value		Area(sqft)		HTM		Load		
1	SnglAsmb no airsp/DarkShingle					0.018	30.0/30.0		2725.0		0.46		1254 Btuh		
	Ceiling Total							2725 (sqft)					1254 Btuh		
Floors	Type						R-Value		Size		HTM		Load		
1	Slab On Grade							0.0		2725 (ft-perimeter)		0.0		0 Btuh	
	Floor Total							2725.0 (sqft)					0 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Garcia Residence

, FL

4/8/2024

	Envelope Subtotal:					11037 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.12	27250	1	55.1	1147 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		8	X 230	+	3400	5240 Btuh
	Sensible Envelope Load:					17424 Btuh
Duct load	Average sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)					0 Btuh
	Sensible Load All Zones					17424 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Garcia Residence

, FL

4/8/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	17424 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	17424 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	17424 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1904 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	3504 Btuh
	TOTAL GAIN	20928 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:
Garcia Residence
Building Type: User

, FL

4/8/2024

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	36.0		10.4	374 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	45.0		10.4	468 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	8.0		10.4	83 Btuh
4	2, NFRC 0.20	Vinyl	0.26	N	16.0		10.4	166 Btuh
5	2, NFRC 0.20	Vinyl	0.26	E	3.0		10.4	31 Btuh
6	2, NFRC 0.20	Vinyl	0.26	E	20.0		10.4	208 Btuh
7	2, NFRC 0.20	Vinyl	0.26	E	6.0		10.4	62 Btuh
8	2, NFRC 0.20	Vinyl	0.26	E	24.0		10.4	250 Btuh
9	2, NFRC 0.20	Vinyl	0.26	S	36.0		10.4	374 Btuh
10	2, NFRC 0.20	Vinyl	0.26	S	10.0		10.4	104 Btuh
11	2, NFRC 0.20	Vinyl	0.26	S	90.0		10.4	936 Btuh
12	2, NFRC 0.20	Vinyl	0.26	S	36.0		10.4	374 Btuh
13	2, NFRC 0.20	Vinyl	0.26	W	36.0		10.4	374 Btuh
14	2, NFRC 0.20	Vinyl	0.26	W	4.0		10.4	42 Btuh
Window Total					370.0(sqft)			3848 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	134		2.56	344 Btuh
2	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	110		2.56	282 Btuh
3	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	246		2.56	632 Btuh
4	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	44		2.56	112 Btuh
5	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	246		2.56	632 Btuh
6	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	144		2.56	370 Btuh
7	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	35		2.56	90 Btuh
8	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	138		2.56	353 Btuh
9	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	131		2.56	335 Btuh
10	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	120		2.56	308 Btuh
11	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	332		2.56	851 Btuh
12	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	90		2.56	231 Btuh
13	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	134		2.56	344 Btuh
14	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	420		2.56	1077 Btuh
Wall Total					2324(sqft)			5959 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)		21		18.4	393 Btuh
3	Insulated - Exterior,	n	(0.460)		24		18.4	442 Btuh
4	Insulated - Exterior,	n	(0.460)		48		18.4	883 Btuh
5	Insulated - Exterior,	n	(0.460)		48		18.4	883 Btuh
Door Total					189(sqft)			3484Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Garcia Residence
Building Type: User

4/8/2024

Ceilings 1	Type/Color/Surface Single as/D/Shing Ceiling Total	Ueff. (0.018)	R-Value 30.0/30.0	Area X 2725 2725(sqft)	HTM= 0.71	Load 1929 Btuh 1929Btuh
Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 280.0 ft(perim.) 2725 sqft	HTM= 47.2	Load 13216 Btuh 13216 Btuh
Envelope Subtotal:						28436 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.16	Volume(cuft) 27250	Wall Ratio 1.00	CFM= 73.4	3221 Btuh
Duct load	Average sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)					0 Btuh
All Zones	Sensible Subtotal All Zones					31656 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss Total Heat Loss	(Ex:0 cfm; Sup:0 cfm)	31656 Btuh 0 Btuh 31656 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