

Residential System Sizing Calculation

Summary

Project Title:
Maloy Residence

, FL

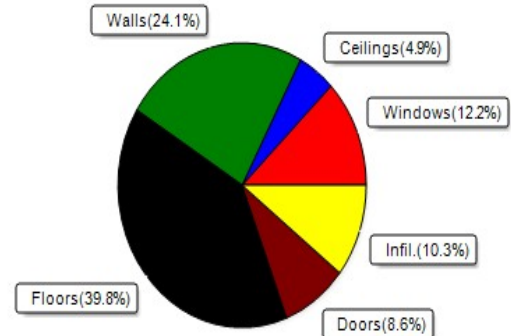
4/16/2024

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	33231	Btuh	Total cooling load calculation	22130	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	144.4	48000	Sensible (SHR = 0.75)	190.4	36000
Heat Pump + Auxiliary(0.0kW)	144.4	48000	Latent	372.8	12000
			Total (Electric Heat Pump)	216.9	48000

WINTER CALCULATIONS

Winter Heating Load (for 2890 sqft)

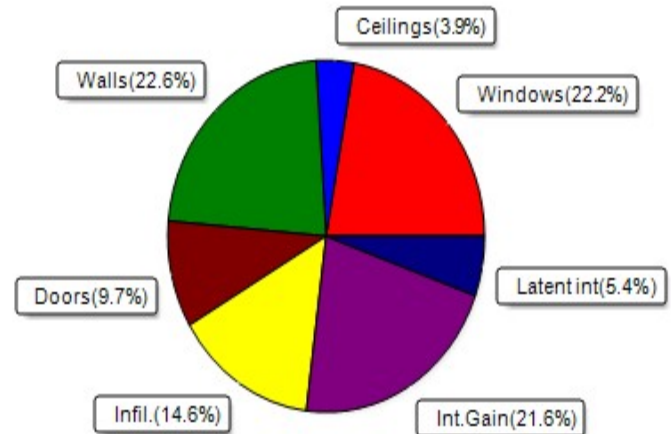
Load component	Load
Window total 391 sqft	4066 Btuh
Wall total 2260 sqft	8023 Btuh
Door total 156 sqft	2870 Btuh
Ceiling total 2890 sqft	1640 Btuh
Floor total 2890 sqft	13216 Btuh
Infiltration 78 cfm	3416 Btuh
Duct loss	0 Btuh
Subtotal	33231 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	33231 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2890 sqft)

Load component	Load
Window total 391 sqft	4903 Btuh
Wall total 2260 sqft	4999 Btuh
Door total 156 sqft	2153 Btuh
Ceiling total 2890 sqft	859 Btuh
Floor total	0 Btuh
Infiltration 58 cfm	1217 Btuh
Internal gain	4780 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	18911 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	2019 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	3219 Btuh
TOTAL HEAT GAIN	22130 Btuh



8th Edition



EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____ 4-16-24

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Maloy Residence

, FL

4/16/2024

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	45.0	0.0	45.0	9	9	412	Btuh
2	2 NFRC	0.20, 0.26	No	No	N	1.5ft	1.3ft	72.0	0.0	72.0	9	9	659	Btuh
3	2 NFRC	0.20, 0.26	No	No	N	1.5ft	1.3ft	24.0	0.0	24.0	9	9	220	Btuh
4	2 NFRC	0.20, 0.26	No	No	E	1.5ft	1.3ft	12.0	0.0	12.0	9	24	291	Btuh
5	2 NFRC	0.20, 0.26	No	No	E	1.5ft	1.3ft	36.0	0.0	36.0	9	24	872	Btuh
6	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	72.0	72.0	0.0	9	11	659	Btuh
7	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	90.0	90.0	0.0	9	11	823	Btuh
8	2 NFRC	0.20, 0.26	No	No	W	1.5ft	1.3ft	8.0	0.0	8.0	9	24	194	Btuh
9	2 NFRC	0.20, 0.26	No	No	W	1.5ft	1.3ft	8.0	0.0	8.0	9	24	194	Btuh
10	2 NFRC	0.20, 0.26	No	No	W	1.5ft	1.3ft	24.0	0.0	24.0	9	24	581	Btuh
	Window Total							391 (sqft)					4903 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load	
								Cav/Sheath						
1	Frame - Wood - Ext					0.09	13.0/0.0	135.0		2.3		306		Btuh
2	Frame - Wood - Ext					0.09	13.0/0.0	143.3		2.3		324		Btuh
3	Frame - Wood - Ext					0.09	13.0/0.0	126.7		2.3		287		Btuh
4	Frame - Wood - Ext					0.09	13.0/0.0	60.0		2.3		136		Btuh
5	Frame - Wood - Ext					0.09	13.0/0.0	129.3		2.3		293		Btuh
6	Frame - Wood - Ext					0.09	13.0/0.0	20.0		2.3		45		Btuh
7	Frame - Wood - Adj					0.09	13.0/0.0	200.0		1.7		337		Btuh
8	Frame - Wood - Ext					0.09	13.0/0.0	108.0		2.3		244		Btuh
9	Frame - Wood - Ext					0.09	13.0/0.0	40.0		2.3		91		Btuh
10	Frame - Wood - Ext					0.09	13.0/0.0	154.0		2.3		349		Btuh
11	Frame - Wood - Ext					0.09	13.0/0.0	40.0		2.3		91		Btuh
12	Frame - Wood - Ext					0.09	13.0/0.0	50.0		2.3		113		Btuh
13	Frame - Wood - Ext					0.09	13.0/0.0	610.0		2.3		1381		Btuh
14	Frame - Wood - Ext					0.09	13.0/0.0	50.0		2.3		113		Btuh
15	Frame - Wood - Ext					0.09	13.0/0.0	40.0		2.3		91		Btuh
16	Frame - Wood - Ext					0.09	13.0/0.0	174.0		2.3		394		Btuh
17	Frame - Wood - Ext					0.09	13.0/0.0	40.0		2.3		91		Btuh
18	Frame - Wood - Ext					0.09	13.0/0.0	139.3		2.3		315		Btuh
	Wall Total							2260 (sqft)					4999 Btuh	
Doors	Type						Area (sqft)		HTM		Load			
1	Insulated - Exterior					48.0		13.8		662		Btuh		
2	Insulated - Exterior					20.0		13.8		276		Btuh		
3	Insulated - Garage					20.0		13.8		276		Btuh		
4	Insulated - Garage					20.0		13.8		276		Btuh		
5	Insulated - Exterior					48.0		13.8		662		Btuh		
	Door Total					156 (sqft)				2153		Btuh		
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)		HTM		Load	
1	SnglAsmb no airsp/Light/Metal					0.014	30.0/44.0	2890.0		0.30		859		Btuh
	Ceiling Total							2890 (sqft)					859 Btuh	
Floors	Type						R-Value		Size		HTM		Load	
1	Slab On Grade					0.0		2890 (ft-perimeter)		0.0		0		Btuh
	Floor Total							2890.0 (sqft)					0 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Maloy Residence

, FL

4/16/2024

	Envelope Subtotal:					12914 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.12	28900	1	58.4	1217 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		6	X 230	+	3400	4780 Btuh
	Sensible Envelope Load:					18911 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)					0 Btuh
	Sensible Load All Zones					18911 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Maloy Residence

, FL

4/16/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	18911 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	18911 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	18911 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2019 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3219 Btuh
	TOTAL GAIN	22130 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:
Maloy Residence
Building Type: User

, FL

4/16/2024

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	45.0		10.4	468 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	72.0		10.4	749 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	24.0		10.4	250 Btuh
4	2, NFRC 0.20	Vinyl	0.26	E	12.0		10.4	125 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	72.0		10.4	749 Btuh
7	2, NFRC 0.20	Vinyl	0.26	S	90.0		10.4	936 Btuh
8	2, NFRC 0.20	Vinyl	0.26	W	8.0		10.4	83 Btuh
9	2, NFRC 0.20	Vinyl	0.26	W	8.0		10.4	83 Btuh
10	2, NFRC 0.20	Vinyl	0.26	W	24.0		10.4	250 Btuh
Window Total					391.0(sqft)			4066 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	135		3.55	479 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	143		3.55	509 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	127		3.55	450 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	60		3.55	213 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	129		3.55	459 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	20		3.55	71 Btuh
7	Frame - Wood	- Adj	(0.089)	13.0/0.0	200		3.55	710 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	108		3.55	383 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	40		3.55	142 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	154		3.55	547 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	40		3.55	142 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	50		3.55	178 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	610		3.55	2166 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	50		3.55	178 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	40		3.55	142 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	174		3.55	618 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	40		3.55	142 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	139		3.55	495 Btuh
Wall Total					2260(sqft)			8023 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)		20		18.4	368 Btuh
3	Insulated - Garage, n		(0.460)		20		18.4	368 Btuh
4	Insulated - Garage, n		(0.460)		20		18.4	368 Btuh
5	Insulated - Exterior, n		(0.460)		48		18.4	883 Btuh
Door Total					156(sqft)			2870Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Maloy Residence
Building Type: User

4/16/2024

Ceilings 1	Type/Color/Surface Single as/L/Metal Ceiling Total	Ueff. (0.014)	R-Value 30.0/44.0	Area X 2890 2890(sqft)	HTM= 0.57	Load 1640 Btuh 1640Btuh
Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 280.0 ft(perim.) 2890 sqft	HTM= 47.2	Load 13216 Btuh 13216 Btuh
Envelope Subtotal:						29815 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.16	Volume(cuft) 28900	Wall Ratio 1.00	CFM= 77.9	3416 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)					0 Btuh
All Zones	Sensible Subtotal All Zones					33231 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss Total Heat Loss	(Ex:0 cfm; Sup:0 cfm)	33231 Btuh 0 Btuh 33231 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