

Residential System Sizing Calculation

Summary

Project Title:
Miller Residence

Lake City, FL

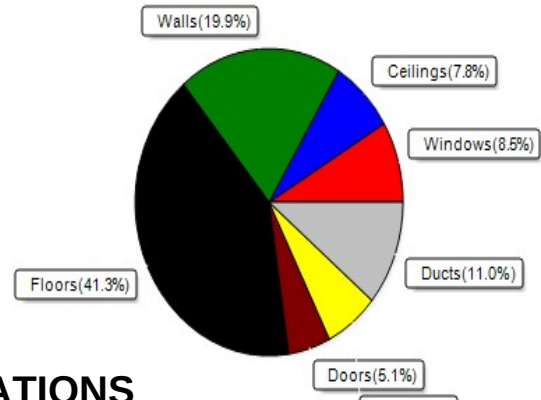
9/20/2023

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	38626 Btuh	Total cooling load calculation	27152 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	108.7 42000	Sensible (SHR = 0.85)	149.3 35700
Heat Pump + Auxiliary(0.0kW)	108.7 42000	Latent	194.9 6300
		Total (Electric Heat Pump)	154.7 42000

WINTER CALCULATIONS

Winter Heating Load (for 2331 sqft)

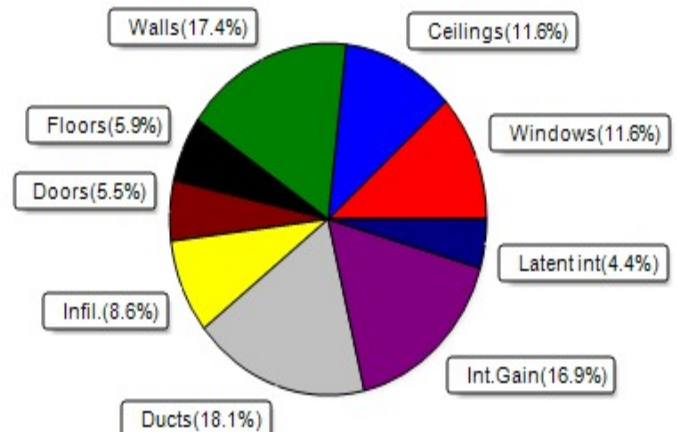
Load component	Load
Window total 251 sqft	3287 Btuh
Wall total 2224 sqft	7705 Btuh
Door total 108 sqft	1987 Btuh
Ceiling total 2331 sqft	2995 Btuh
Floor total See detail report	15944 Btuh
Infiltration 56 cfm	2466 Btuh
Duct loss	4243 Btuh
Subtotal	38626 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	38626 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2331 sqft)

Load component	Load
Window total 251 sqft	3149 Btuh
Wall total 2224 sqft	4713 Btuh
Door total 108 sqft	1490 Btuh
Ceiling total 2331 sqft	3142 Btuh
Floor total	1615 Btuh
Infiltration 42 cfm	878 Btuh
Internal gain	4580 Btuh
Duct gain	4352 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	23920 Btuh
Latent gain(ducts)	575 Btuh
Latent gain(infiltration)	1458 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	3232 Btuh
TOTAL HEAT GAIN	27152 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

9-20-23

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Miller Residence

Lake City, FL

9/20/2023

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	0.22, 0.33	No	No	N	1.5ft	1.3ft	15.0	0.0	15.0	11	11	163	Btuh	
2	2 NFRC	0.22, 0.33	No	No	N	1.5ft	1.3ft	36.0	0.0	36.0	11	11	392	Btuh	
3	2 NFRC	0.22, 0.33	No	No	E	1.5ft	1.3ft	18.0	0.0	18.0	11	27	495	Btuh	
4	2 NFRC	0.22, 0.33	No	No	N	6.8ft	1.3ft	20.0	0.0	20.0	11	11	218	Btuh	
5	2 NFRC	0.22, 0.33	No	No	N	9.5ft	1.3ft	30.0	0.0	30.0	11	11	327	Btuh	
6	2 NFRC	0.22, 0.33	No	No	N	1.5ft	1.3ft	15.0	0.0	15.0	11	11	163	Btuh	
7	2 NFRC	0.22, 0.33	No	No	E	1.5ft	1.3ft	8.0	0.0	8.0	11	27	220	Btuh	
8	2 NFRC	0.22, 0.33	No	No	S	1.5ft	1.3ft	15.0	15.0	0.0	11	13	163	Btuh	
9	2 NFRC	0.22, 0.33	No	No	S	7.5ft	1.3ft	36.0	36.0	0.0	11	13	392	Btuh	
10	2 NFRC	0.22, 0.33	No	No	S	1.5ft	1.3ft	18.0	18.0	0.0	11	13	196	Btuh	
11	2 NFRC	0.22, 0.33	No	No	N	1.5ft	1.3ft	4.5	0.0	4.5	11	11	49	Btuh	
12	2 NFRC	0.22, 0.33	No	No	N	1.5ft	1.3ft	8.0	0.0	8.0	11	11	87	Btuh	
13	2 NFRC	0.22, 0.33	No	No	N	1.5ft	1.3ft	20.0	0.0	20.0	11	11	218	Btuh	
14	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	7.0	7.0	0.0	9	11	64	Btuh	
	Window Total								251 (sqft)					3149 Btuh	
Walls	Type				U-Value	R-Value	Area(sqft)			HTM		Load			
						Cav/Sheath									
1	Frame - Wood - Ext					0.09	13.0/0.6		177.0			2.2		389	Btuh
2	Frame - Wood - Ext					0.09	13.0/0.6		96.0			2.2		211	Btuh
3	Frame - Wood - Ext					0.09	13.0/0.6		90.0			2.2		198	Btuh
4	Frame - Wood - Ext					0.09	13.0/0.6		26.7			2.2		59	Btuh
5	Frame - Wood - Ext					0.09	13.0/0.6		85.3			2.2		188	Btuh
6	Frame - Wood - Ext					0.09	13.0/0.6		72.0			2.2		158	Btuh
7	Frame - Wood - Ext					0.09	13.0/0.6		96.0			2.2		211	Btuh
8	Frame - Wood - Ext					0.09	13.0/0.6		325.0			2.2		714	Btuh
9	Frame - Wood - Ext					0.09	13.0/0.6		96.0			2.2		211	Btuh
10	Frame - Wood - Ext					0.09	13.0/0.6		27.0			2.2		59	Btuh
11	Frame - Wood - Ext					0.09	13.0/0.6		30.0			2.2		66	Btuh
12	Frame - Wood - Ext					0.09	13.0/0.6		30.0			2.2		66	Btuh
13	Frame - Wood - Ext					0.09	13.0/0.6		80.7			2.2		177	Btuh
14	Frame - Wood - Ext					0.09	13.0/0.6		43.3			2.2		95	Btuh
15	Frame - Wood - Ext					0.09	13.0/0.6		60.0			2.2		132	Btuh
16	Frame - Wood - Ext					0.09	13.0/0.6		183.5			2.2		403	Btuh
17	Frame - Wood - Adj					0.09	13.0/0.6		355.0			1.6		581	Btuh
18	Frame - Wood - Ext					0.09	13.0/0.0		126.7			2.3		287	Btuh
19	Frame - Wood - Ext					0.09	13.0/0.0		97.0			2.3		220	Btuh
20	Frame - Wood - Ext					0.09	13.0/0.0		126.7			2.3		287	Btuh
	Wall Total								2224 (sqft)					4713 Btuh	
Doors	Type				U-Value	R-Value	Area (sqft)			HTM		Load			
1	Insulated - Exterior							48.0			13.8		662	Btuh	
2	Insulated - Exterior							40.0			13.8		552	Btuh	
3	Insulated - Garage							20.0			13.8		276	Btuh	
	Door Total								108 (sqft)					1490 Btuh	
Ceilings	Type/Color/Surface				U-Value	R-Value	Area(sqft)			HTM		Load			
1	Vented Attic/Med/Shingle					0.032	30.0/0.0		2031.0			1.40		2846	Btuh
2	SnglAsmb no airsp/Med/Shingle					0.034	30.0/0.0		300.0			0.99		296	Btuh
	Ceiling Total								2331 (sqft)					3142 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Miller Residence

Lake City, FL

9/20/2023

Floors	Type	R-Value	Size	HTM	Load	
1	Slab On Grade	0.0	2031 (ft-perimeter)	0.0	0 Btuh	
2	Raised Wood - Adj	0.0	300 (sqft)	5.4	1615 Btuh	
	Floor Total		2331.0 (sqft)		1615 Btuh	
	Envelope Subtotal:				14109 Btuh	
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.12	20679	1	42.2	878 Btuh
Internal gain		Occupants	Btuh/occupant	Appliance		Load
		6	X 230	+	3200	4580 Btuh
	Sensible Envelope Load:					19568 Btuh
Duct load	Extremely sealed, Supply(R6.0-Attic), Return(R6.0-Attic)			(DGM of 0.222)		4352 Btuh
	Sensible Load All Zones					23920 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Miller Residence

Lake City, FL

9/20/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	19568 Btuh
	Sensible Duct Load	4352 Btuh
	Total Sensible Zone Loads	23920 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	23920 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1458 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	575 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3232 Btuh
	TOTAL GAIN	27152 Btuh

EQUIPMENT

1. Central Unit	#	42000 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

Lake City, FL

Project Title:
Miller Residence
Building Type: User

9/20/2023

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 0.22	Vinyl	0.33	N	15.0		13.2	198 Btuh
2	2, NFRC 0.22	Vinyl	0.33	N	36.0		13.2	475 Btuh
3	2, NFRC 0.22	Vinyl	0.33	E	18.0		13.2	238 Btuh
4	2, NFRC 0.22	Vinyl	0.33	N	20.0		13.2	264 Btuh
5	2, NFRC 0.22	Vinyl	0.33	N	30.0		13.2	396 Btuh
6	2, NFRC 0.22	Vinyl	0.33	N	15.0		13.2	198 Btuh
7	2, NFRC 0.22	Vinyl	0.33	E	8.0		13.2	106 Btuh
8	2, NFRC 0.22	Vinyl	0.33	S	15.0		13.2	198 Btuh
9	2, NFRC 0.22	Vinyl	0.33	S	36.0		13.2	475 Btuh
10	2, NFRC 0.22	Vinyl	0.33	S	18.0		13.2	238 Btuh
11	2, NFRC 0.22	Vinyl	0.33	N	4.5		13.2	59 Btuh
12	2, NFRC 0.22	Vinyl	0.33	N	8.0		13.2	106 Btuh
13	2, NFRC 0.22	Vinyl	0.33	N	20.0		13.2	264 Btuh
14	2, NFRC 0.20	Vinyl	0.26	S	7.0		10.4	73 Btuh
Window Total					250.5(sqft)			3287 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	177		3.45	610 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	96		3.45	331 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	90		3.45	310 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	27		3.45	92 Btuh
5	Frame - Wood	- Ext	(0.086)	13.0/0.6	85		3.45	294 Btuh
6	Frame - Wood	- Ext	(0.086)	13.0/0.6	72		3.45	248 Btuh
7	Frame - Wood	- Ext	(0.086)	13.0/0.6	96		3.45	331 Btuh
8	Frame - Wood	- Ext	(0.086)	13.0/0.6	325		3.45	1121 Btuh
9	Frame - Wood	- Ext	(0.086)	13.0/0.6	96		3.45	331 Btuh
10	Frame - Wood	- Ext	(0.086)	13.0/0.6	27		3.45	93 Btuh
11	Frame - Wood	- Ext	(0.086)	13.0/0.6	30		3.45	103 Btuh
12	Frame - Wood	- Ext	(0.086)	13.0/0.6	30		3.45	103 Btuh
13	Frame - Wood	- Ext	(0.086)	13.0/0.6	81		3.45	278 Btuh
14	Frame - Wood	- Ext	(0.086)	13.0/0.6	43		3.45	149 Btuh
15	Frame - Wood	- Ext	(0.086)	13.0/0.6	60		3.45	207 Btuh
16	Frame - Wood	- Ext	(0.086)	13.0/0.6	184		3.45	633 Btuh
17	Frame - Wood	- Adj	(0.086)	13.0/0.6	355		3.45	1224 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	127		3.55	450 Btuh
19	Frame - Wood	- Ext	(0.089)	13.0/0.0	97		3.55	344 Btuh
20	Frame - Wood	- Ext	(0.089)	13.0/0.0	127		3.55	450 Btuh
Wall Total					2224(sqft)			7705 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Lake City, FL

Project Title:
Miller Residence
Building Type: User

9/20/2023

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)		40	18.4	736 Btuh
3	Insulated - Garage, n	(0.460)		20	18.4	368 Btuh
	Door Total			108(sqft)		1987Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Flat ceil/M/Shing	(0.032)	30.0/0.0	2031	1.3	2587 Btuh
2	Single as/M/Shing	(0.034)	30.0/0.0	300	1.4	408 Btuh
	Ceiling Total			2331(sqft)		2995Btuh
Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	240.0 ft(perim.)	47.2	11328 Btuh
2	Raised Wood - Adj	(0.385)	0.0	300.0 sqft	15.4	4616 Btuh
	Floor Total			2331 sqft		15944 Btuh
	Envelope Subtotal:					31918 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural	0.16	20679	1.00	56.3	2466 Btuh
Duct load	Extremely sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.123)					4243 Btuh
All Zones	Sensible Subtotal All Zones					38626 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	38626 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	38626 Btuh

EQUIPMENT

1. Electric Heat Pump	#	42000 Btuh
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Manual J Winter Calculations

Residential Load - Component Details (continued)

Lake City, FL

Project Title:
Miller Residence
Building Type: User

9/20/2023

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