

Residential System Sizing Calculation

Summary

Old Mill Road
Lake City, FL 32055

Project Title:
Suzie Hall

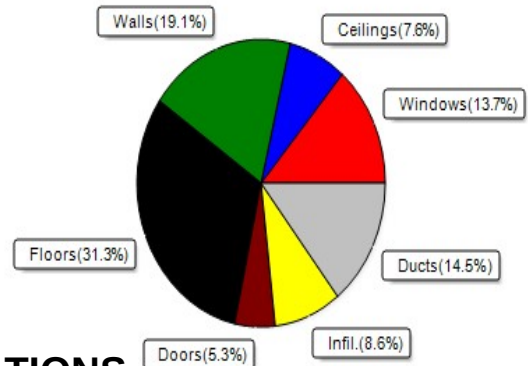
5/13/2020

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	47135 Btuh	Total cooling load calculation	39590 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	101.8 48000	Sensible (SHR = 0.85)	120.3 40800
Heat Pump + Auxiliary(0.0kW)	101.8 48000	Latent	127.1 7200
		Total (Electric Heat Pump)	121.2 48000

WINTER CALCULATIONS

Winter Heating Load (for 2805 sqft)

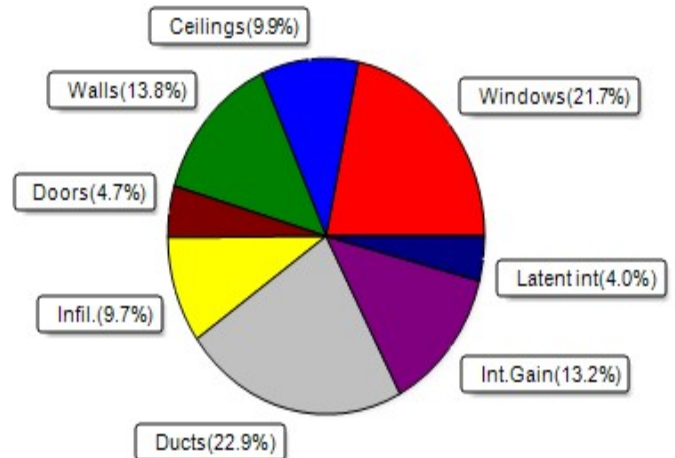
Load component		Load	
Window total	489 sqft	6455	Btuh
Wall total	2610 sqft	9002	Btuh
Door total	135 sqft	2478	Btuh
Ceiling total	2805 sqft	3573	Btuh
Floor total	2805 sqft	14774	Btuh
Infiltration	92 cfm	4042	Btuh
Duct loss		6811	Btuh
Subtotal		47135	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		47135	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2805 sqft)

Load component		Load	
Window total	489 sqft	8605	Btuh
Wall total	2610 sqft	5450	Btuh
Door total	135 sqft	1858	Btuh
Ceiling total	2805 sqft	3931	Btuh
Floor total		0	Btuh
Infiltration	69 cfm	1440	Btuh
Internal gain		5240	Btuh
Duct gain		7398	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		33923	Btuh
Latent gain(ducts)		1677	Btuh
Latent gain(infiltration)		2390	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1600	Btuh
Total latent gain		5667	Btuh
TOTAL HEAT GAIN		39590	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

5-13-20

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Old Mill Road
Lake City, FL 32055

Project Title:
Suzie Hall

5/13/2020

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	0.22, 0.33	No	No	W		1.5ft	1.3ft	15.0	0.0	15.0	11	27	412	Btuh
2	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	54.0	0.0	54.0	11	27	1484	Btuh
3	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	36.0	0.0	36.0	11	11	392	Btuh
4	2 NFRC	0.22, 0.33	No	No	W		10.5f	1.3ft	60.0	60.0	0.0	11	27	654	Btuh
5	2 NFRC	0.22, 0.33	No	No	W		10.5f	1.3ft	30.0	30.0	0.0	11	27	327	Btuh
6	2 NFRC	0.22, 0.33	No	No	N		13.5f	1.3ft	30.0	0.0	30.0	11	11	327	Btuh
7	2 NFRC	0.22, 0.33	No	No	N		13.5f	1.3ft	15.0	0.0	15.0	11	11	163	Btuh
8	2 NFRC	0.22, 0.33	No	No	W		19.8f	1.3ft	30.0	30.0	0.0	11	27	327	Btuh
9	2 NFRC	0.22, 0.33	No	No	W		19.8f	1.3ft	15.0	15.0	0.0	11	27	163	Btuh
10	2 NFRC	0.22, 0.33	No	No	W		19.8f	1.3ft	25.0	25.0	0.0	11	27	272	Btuh
11	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	18.0	0.0	18.0	11	27	495	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	36.0	0.0	36.0	11	11	392	Btuh
14	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	4.0	0.0	4.0	11	11	44	Btuh
15	2 NFRC	0.22, 0.33	No	No	E		4.5ft	1.3ft	10.0	4.8	5.2	11	27	195	Btuh
16	2 NFRC	0.22, 0.33	No	No	E		9.5ft	3.3ft	60.0	45.5	14.5	11	27	894	Btuh
17	2 NFRC	0.22, 0.33	No	No	E		9.5ft	1.3ft	16.0	13.1	2.9	11	27	222	Btuh
18	2 NFRC	0.22, 0.33	No	No	E		4.5ft	1.3ft	10.0	4.8	5.2	11	27	195	Btuh
19	2 NFRC	0.22, 0.33	No	No	S		1.5ft	1.3ft	9.0	9.0	0.0	11	13	98	Btuh
20	2 NFRC	0.22, 0.33	No	No	S		1.5ft	1.3ft	8.0	8.0	0.0	11	13	87	Btuh
Excursion														1373	Btuh
Window Total									489 (sqft)					8605 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load					
					Cav/Sheath										
1	Frame - Wood - Ext	0.09		13.0/0.6		171.0		2.2		376 Btuh					
2	Frame - Wood - Ext	0.09		13.0/0.6		195.7		2.2		430 Btuh					
3	Frame - Wood - Ext	0.09		13.0/0.6		72.0		2.2		158 Btuh					
4	Frame - Wood - Ext	0.09		13.0/0.6		67.0		2.2		147 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		103.3		2.2		227 Btuh					
7	Frame - Wood - Ext	0.09		13.0/0.6		168.7		2.2		371 Btuh					
8	Frame - Wood - Ext	0.09		13.0/0.6		340.3		2.2		748 Btuh					
9	Frame - Wood - Ext	0.09		13.0/0.6		46.7		2.2		103 Btuh					
10	Frame - Wood - Ext	0.09		13.0/0.6		65.0		2.2		143 Btuh					
11	Frame - Wood - Ext	0.09		13.0/0.6		288.0		2.2		633 Btuh					
12	Frame - Wood - Ext	0.09		13.0/0.6		65.0		2.2		143 Btuh					
13	Frame - Wood - Ext	0.09		13.0/0.6		116.7		2.2		256 Btuh					
14	Frame - Wood - Ext	0.09		13.0/0.6		311.3		2.2		684 Btuh					
15	Frame - Wood - Adj	0.09		13.0/0.6		514.3		1.6		842 Btuh					
Wall Total						2610 (sqft)						5450 Btuh			
Doors	Type	Area (sqft)		HTM		Load									
1	Insulated - Exterior	20.0		13.8		276 Btuh									
2	Insulated - Exterior	66.7		13.8		920 Btuh									
3	Insulated - Exterior	24.0		13.8		331 Btuh									
4	Insulated - Garage	24.0		13.8		331 Btuh									
Door Total						135 (sqft)	1858 Btuh								

Manual J Summer Calculations

Residential Load - Component Details (continued)

Old Mill Road
Lake City, FL 32055

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Suzie Hall

5/13/2020

Ceilings 1	Type/Color/Surface Vented Attic/Light/Shingle Ceiling Total	U-Value 0.032	R-Value 30.0/0.0	Area(sqft) 2805.0 2805 (sqft)	HTM 1.40	Load 3931 Btuh 3931 Btuh
Floors 1	Type Slab On Grade Floor Total		R-Value 0.0	Size 2805 (ft-perimeter) 2805.0 (sqft)	HTM 0.0	Load 0 Btuh 0 Btuh
	Envelope Subtotal:					19845 Btuh
Infiltration	Type Natural	Average ACH 0.15	Volume(cuft) 28050	Wall Ratio 1	CFM= 69.2	Load 1440 Btuh
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	3400	Load 5240 Btuh
	Sensible Envelope Load:					26525 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.279)					7398 Btuh
	Sensible Load All Zones					33923 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Old Mill Road
Lake City, FL 32055

Project Title:
Suzie Hall

Climate:FL_GAINESVILLE_REGIONAL_A

5/13/2020

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	26525 Btuh
	Sensible Duct Load	7398 Btuh
	Total Sensible Zone Loads	33923 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	33923 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2390 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1677 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	5667 Btuh
	TOTAL GAIN	39590 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

Old Mill Road
Lake City, FL 32055

Project Title:
Suzie Hall
Building Type: User

5/13/2020

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 0.22	Vinyl	0.33	W	15.0		13.2	198 Btuh
2	2, NFRC 0.22	Vinyl	0.33	W	54.0		13.2	713 Btuh
3	2, NFRC 0.22	Vinyl	0.33	N	36.0		13.2	475 Btuh
4	2, NFRC 0.22	Vinyl	0.33	W	60.0		13.2	792 Btuh
5	2, NFRC 0.22	Vinyl	0.33	W	30.0		13.2	396 Btuh
6	2, NFRC 0.22	Vinyl	0.33	N	30.0		13.2	396 Btuh
7	2, NFRC 0.22	Vinyl	0.33	N	15.0		13.2	198 Btuh
8	2, NFRC 0.22	Vinyl	0.33	W	30.0		13.2	396 Btuh
9	2, NFRC 0.22	Vinyl	0.33	W	15.0		13.2	198 Btuh
10	2, NFRC 0.22	Vinyl	0.33	W	25.0		13.2	330 Btuh
11	2, NFRC 0.22	Vinyl	0.33	W	18.0		13.2	238 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	36.0		13.2	475 Btuh
14	2, NFRC 0.22	Vinyl	0.33	N	4.0		13.2	53 Btuh
15	2, NFRC 0.22	Vinyl	0.33	E	10.0		13.2	132 Btuh
16	2, NFRC 0.22	Vinyl	0.33	E	60.0		13.2	792 Btuh
17	2, NFRC 0.22	Vinyl	0.33	E	16.0		13.2	211 Btuh
18	2, NFRC 0.22	Vinyl	0.33	E	10.0		13.2	132 Btuh
19	2, NFRC 0.22	Vinyl	0.33	S	9.0		13.2	119 Btuh
20	2, NFRC 0.22	Vinyl	0.33	S	8.0		13.2	106 Btuh
Window Total					489.0(sqft)			6455 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	171		3.45	590 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	196		3.45	675 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	72		3.45	248 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	67		3.45	231 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	103		3.45	356 Btuh
7	Frame - Wood	- Ext	(0.086)	13.0/0.6	169		3.45	582 Btuh
8	Frame - Wood	- Ext	(0.086)	13.0/0.6	340		3.45	1174 Btuh
9	Frame - Wood	- Ext	(0.086)	13.0/0.6	47		3.45	161 Btuh
10	Frame - Wood	- Ext	(0.086)	13.0/0.6	65		3.45	224 Btuh
11	Frame - Wood	- Ext	(0.086)	13.0/0.6	288		3.45	993 Btuh
12	Frame - Wood	- Ext	(0.086)	13.0/0.6	65		3.45	224 Btuh
13	Frame - Wood	- Ext	(0.086)	13.0/0.6	117		3.45	402 Btuh
14	Frame - Wood	- Ext	(0.086)	13.0/0.6	311		3.45	1074 Btuh
15	Frame - Wood	- Adj	(0.086)	13.0/0.6	514		3.45	1774 Btuh
Wall Total					2610(sqft)			9002 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Old Mill Road
Lake City, FL 32055

Project Title:
Suzie Hall
Building Type: User

5/13/2020

Doors	Type	Storm Ueff.		Area	X	HTM=	Load
	1	Insulated - Exterior, n	(0.460)		20	18.4	368 Btuh
	2	Insulated - Exterior, n	(0.460)		67	18.4	1227 Btuh
	3	Insulated - Exterior, n	(0.460)		24	18.4	442 Btuh
	4	Insulated - Garage, n	(0.460)		24	18.4	442 Btuh
	Door Total			135(sqft)			2478Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area	X	HTM=	Load
	1	Vented Attic/L/Shing	(0.032)	30.0/0.0	2805	1.3	3573 Btuh
	Ceiling Total			2805(sqft)			3573Btuh
Floors	Type	Ueff.	R-Value	Size	X	HTM=	Load
	1	Slab On Grade	(1.180)	0.0	313.0 ft(perim.)	47.2	14774 Btuh
	Floor Total			2805 sqft			14774 Btuh
	Envelope Subtotal:						36281 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural	0.20	28050	1.00	92.3		4042 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.169)						6811 Btuh
All Zones	Sensible Subtotal All Zones						47135 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	47135 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	47135 Btuh

EQUIPMENT

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

Residential Load - Component Details (continued)

Old Mill Road
Lake City, FL 32055

Project Title:
Suzie Hall
Building Type: User

5/13/2020

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