

Residential System Sizing Calculation

Summary

Project Title:
Mitchelle Residence

Lake City, FL

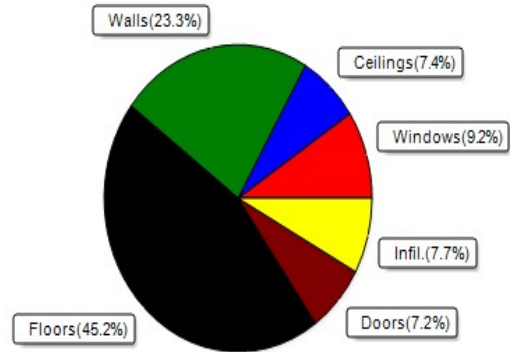
3/25/2022

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	30103 Btuh	Total cooling load calculation	19516 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	139.5 42000	Sensible (SHR = 0.85)	215.8 35700
Heat Pump + Auxiliary(0.0kW)	139.5 42000	Latent	211.9 6300
		Total (Electric Heat Pump)	215.2 42000

WINTER CALCULATIONS

Winter Heating Load (for 2153 sqft)

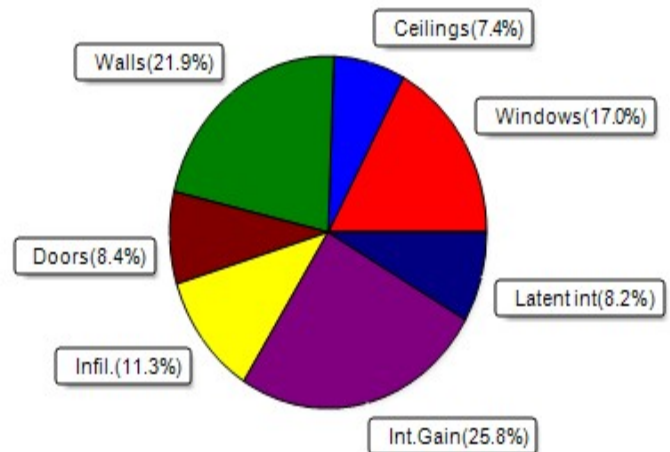
Load component		Load	
Window total	267 sqft	2777	Btuh
Wall total	2035 sqft	7019	Btuh
Door total	136 sqft	2176	Btuh
Ceiling total	2153 sqft	2214	Btuh
Floor total	2153 sqft	13594	Btuh
Infiltration	53 cfm	2324	Btuh
Duct loss		0	Btuh
Subtotal		30103	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		30103	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2153 sqft)

Load component		Load	
Window total	267 sqft	3327	Btuh
Wall total	2035 sqft	4276	Btuh
Door total	136 sqft	1632	Btuh
Ceiling total	2153 sqft	1439	Btuh
Floor total		0	Btuh
Infiltration	40 cfm	828	Btuh
Internal gain		5040	Btuh
Duct gain		0	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		16542	Btuh
Latent gain(ducts)		0	Btuh
Latent gain(infiltration)		1374	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1600	Btuh
Total latent gain		2974	Btuh
TOTAL HEAT GAIN		19516	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Mitchelle Residence

Lake City, FL

3/25/2022

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		1.5ft	2.3ft	30.0	0.0	30.0	9	9	274	Btuh	
2	2 NFRC	0.20, 0.26	No	No	N		10.5f	2.3ft	54.0	0.0	54.0	9	9	494	Btuh	
3	2 NFRC	0.20, 0.26	No	No	N		10.5f	2.3ft	16.0	0.0	16.0	9	9	146	Btuh	
4	2 NFRC	0.20, 0.26	No	No	W		1.5ft	2.3ft	15.0	0.0	15.0	9	24	363	Btuh	
5	2 NFRC	0.20, 0.26	No	No	N		1.5ft	2.3ft	30.0	0.0	30.0	9	9	274	Btuh	
6	2 NFRC	0.20, 0.26	No	No	E		1.5ft	2.3ft	10.0	0.0	10.0	9	24	242	Btuh	
7	2 NFRC	0.20, 0.26	No	No	E		1.5ft	2.3ft	8.0	0.0	8.0	9	24	194	Btuh	
8	2 NFRC	0.20, 0.26	No	No	E		1.5ft	2.3ft	6.0	0.0	6.0	9	24	145	Btuh	
9	2 NFRC	0.20, 0.26	No	No	S		1.5ft	2.3ft	8.0	8.0	0.0	9	11	73	Btuh	
10	2 NFRC	0.20, 0.26	No	No	S		9.5ft	2.3ft	72.0	72.0	0.0	9	11	659	Btuh	
11	2 NFRC	0.20, 0.26	No	No	W		1.5ft	2.3ft	15.0	0.0	15.0	9	24	363	Btuh	
12	2 NFRC	0.20, 0.26	No	No	W		1.5ft	2.3ft	3.0	0.0	3.0	9	24	73	Btuh	
	Excursion													26	Btuh	
	Window Total								267 (sqft)					3327 Btuh		
Walls	Type						U-Value	R-Value	Area(sqft)			HTM		Load		
								Cav/Sheath								
1	Frame - Wood - Ext						0.09	13.0/0.6	58.5			2.2		129 Btuh		
2	Frame - Wood - Ext						0.09	13.0/0.6	63.0			2.2		138 Btuh		
3	Frame - Wood - Ext						0.09	13.0/0.6	91.5			2.2		201 Btuh		
4	Frame - Wood - Ext						0.09	13.0/0.6	111.0			2.2		244 Btuh		
5	Frame - Wood - Ext						0.09	13.0/0.6	163.3			2.2		359 Btuh		
6	Frame - Wood - Ext						0.09	13.0/0.6	139.5			2.2		307 Btuh		
7	Frame - Wood - Ext						0.09	13.0/0.6	165.0			2.2		363 Btuh		
8	Frame - Wood - Ext						0.09	13.0/0.6	198.0			2.2		435 Btuh		
9	Frame - Wood - Adj						0.09	13.0/0.6	354.0			1.6		580 Btuh		
10	Frame - Wood - Ext						0.09	13.0/0.6	65.5			2.2		144 Btuh		
11	Frame - Wood - Ext						0.09	13.0/0.6	53.3			2.2		117 Btuh		
12	Frame - Wood - Ext						0.09	13.0/0.6	206.7			2.2		454 Btuh		
13	Frame - Wood - Ext						0.09	13.0/0.6	73.5			2.2		162 Btuh		
14	Frame - Wood - Ext						0.09	13.0/0.6	58.5			2.2		129 Btuh		
15	Frame - Wood - Ext						0.09	13.0/0.6	234.0			2.2		514 Btuh		
	Wall Total								2035 (sqft)					4276 Btuh		
Doors	Type								Area (sqft)			HTM		Load		
1	Insulated - Exterior								40.0			12.0		480 Btuh		
2	Insulated - Exterior								24.0			12.0		288 Btuh		
3	Insulated - Garage								24.0			12.0		288 Btuh		
4	Insulated - Exterior								48.0			12.0		576 Btuh		
	Door Total								136 (sqft)					1632 Btuh		
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)			HTM		Load		
1	Cath/Sngl Assem/DarkShingle						0.026	38.0/0.0	2153.0			0.67		1439 Btuh		
	Ceiling Total								2153 (sqft)					1439 Btuh		
Floors	Type							R-Value	Size			HTM		Load		
1	Slab On Grade							0.0	2153 (ft-perimeter)			0.0		0 Btuh		
	Floor Total								2153.0 (sqft)					0 Btuh		
	Envelope Subtotal:													10674 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Mitchelle Residence

Lake City, FL

3/25/2022

Infiltration	Type Natural	Average ACH 0.12	Volume(cuft) 19377	Wall Ratio 1	CFM= 39.8	Load 828 Btuh
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	3200	Load 5040 Btuh
	Sensible Envelope Load:					16542 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)					0 Btuh
	Sensible Load All Zones					16542 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Mitchelle Residence

Lake City, FL

3/25/2022

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	16542 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	16542 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	16542 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1374 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	2974 Btuh
	TOTAL GAIN	19516 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:
Mitchelle Residence
Building Type: User

3/25/2022

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	30.0		10.4	312 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	54.0		10.4	562 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	16.0		10.4	166 Btuh
4	2, NFRC 0.20	Vinyl	0.26	W	15.0		10.4	156 Btuh
5	2, NFRC 0.20	Vinyl	0.26	N	30.0		10.4	312 Btuh
6	2, NFRC 0.20	Vinyl	0.26	E	10.0		10.4	104 Btuh
7	2, NFRC 0.20	Vinyl	0.26	E	8.0		10.4	83 Btuh
8	2, NFRC 0.20	Vinyl	0.26	E	6.0		10.4	62 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	72.0		10.4	749 Btuh
11	2, NFRC 0.20	Vinyl	0.26	W	15.0		10.4	156 Btuh
12	2, NFRC 0.20	Vinyl	0.26	W	3.0		10.4	31 Btuh
Window Total					267.0(sqft)			2777 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	59		3.45	202 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	63		3.45	217 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	92		3.45	316 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	111		3.45	383 Btuh
5	Frame - Wood	- Ext	(0.086)	13.0/0.6	163		3.45	563 Btuh
6	Frame - Wood	- Ext	(0.086)	13.0/0.6	140		3.45	481 Btuh
7	Frame - Wood	- Ext	(0.086)	13.0/0.6	165		3.45	569 Btuh
8	Frame - Wood	- Ext	(0.086)	13.0/0.6	198		3.45	683 Btuh
9	Frame - Wood	- Adj	(0.086)	13.0/0.6	354		3.45	1221 Btuh
10	Frame - Wood	- Ext	(0.086)	13.0/0.6	66		3.45	226 Btuh
11	Frame - Wood	- Ext	(0.086)	13.0/0.6	53		3.45	184 Btuh
12	Frame - Wood	- Ext	(0.086)	13.0/0.6	207		3.45	713 Btuh
13	Frame - Wood	- Ext	(0.086)	13.0/0.6	74		3.45	253 Btuh
14	Frame - Wood	- Ext	(0.086)	13.0/0.6	59		3.45	202 Btuh
15	Frame - Wood	- Ext	(0.086)	13.0/0.6	234		3.45	807 Btuh
Wall Total					2035(sqft)			7019 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		40		16.0	640 Btuh
2	Insulated - Exterior,	n	(0.400)		24		16.0	384 Btuh
3	Insulated - Garage,	n	(0.400)		24		16.0	384 Btuh
4	Insulated - Exterior,	n	(0.400)		48		16.0	768 Btuh
Door Total					136(sqft)			2176Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Cathedral/D/Shing		(0.026)	38.0/0.0	2153		1.0	2214 Btuh
Ceiling Total					2153(sqft)			2214Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	288.0 ft(perim.)		47.2	13594 Btuh
Floor Total					2153 sqft			13594 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Lake City, FL

Project Title:
Mitchelle Residence
Building Type: User

3/25/2022

	Envelope Subtotal:						27779 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.16	Volume(cuft) 19377	Wall Ratio 1.00	CFM= 53.1		2324 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)						0 Btuh
All Zones	Sensible Subtotal All Zones						30103 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	30103 Btuh 0 Btuh 30103 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	42000 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